The Builder.

VOL. LXXXIII.—No. 3124. DECEMBER 20, 1902.

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Competition Plans for Royal Sanatorium for Tuberculosis ..... By Mr. Arnold Mitchell, F.R.I.B.A.
Electric Station, &c., on the Severn ..... Mr. G. Hornblower, F.R.I.B.A., Architect.
A New Bank at Chatham ..... Mr. W. Campbell Jones, A.R.I.B.A., Architect.
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Collected Essays of William Morris.

FROM the appearance of a new edition of William Morris's various lectures and essays on artistic subjects,* issued by a firm which is not in the habit of publishing what there is no demand for, it is to be argued that there is still a market in the world of books for this gospel of pessimism; that there are still an appreciable number of people who enjoy reading, and like to have on their shelves, a volume of denunciations of everything in their own country and in their own age as incurably sordid, mean, and hopeless. It is not, to our thinking, either a wise or a pleasant kind of literature; and it has the additional drawback of being somewhat monotonous. For in spite of the various titles to the eleven essays contained in this book, the subject is always the same: the wickedness of competition, the baneful influence of machinery on art and on life, the general ugliness of all modern life, and the impossibility of any true or healthful art except that which springs from the working craftsman. Not only the same arguments but very often the same expressions are repeated; and in fact all that Morris had to say in these eleven essays might very well have been compressed into one of them.

Morris's influence for good on the taste and the workmanship of his generation, in regard to what is called industrial art, we should be the last to under-rate. Since the Early Victorian era there has been almost a revolution in English taste in such matters, which is now on the whole superior to that of any other country; certainly superior to that of either Germany or France; and if Morris did not actually bring about this revolution, he was at all events one of the largest factors in it. His almost instinctive insight into the technique of different manufactures, and its governing influence on design, enabled him to impart new life and truthfulness into industrial art; and as far as his actions and his practical influence are concerned we ought to feel nothing but gratitude to him. But in his philosophy of art and life he was a man possessed by an *idée fixe*, and a very narrow one. Men who are strongly possessed by one idea, and are never tired of asserting it, are the men who bring about changes; their pertinacity is useful or even necessary for the moment; but one objects to see their exaggerated and over-stated postulates collected into a book for permanent reading.

The one idea in these essays which is really a sound and a valuable one, and which has borne much fruit, is that things should be made because they are worth making, not merely because they can be sold, and that there can be no artistic value in any production the making of which has not been a pleasure and an interest to the maker. That is a great and wholesome truth, and we may thank Morris for having hammered it well home. This principle carries with it, of course, the recognition of the individual artisan, and would put an end to that wretched system of the production of so-called works of art by commercial firms, who pay anonymous craftsmen to execute work for which the credit (or discredit) goes to the paymasters and not to the craftsmen; a system which some of the best firms in the country are now giving up, and which a gradually improving public opinion will in time compel others to give up. This gospel of the joy of art is the golden thread which runs through Morris's lengthy and often extravagantly-worded vaticinations.

What Morris said over and over again as to the baneful influence of machinery upon art—handicraft art especially, is also perfectly true. The man who is employed in a factory making over and over again one portion only of an object of which the other portions are to be supplied by hands in other departments—or overlooking a machine which makes it—is not likely to take pleasure in his work for its own sake, or to produce anything that is beautiful in itself. But Morris does not seem to have at all realised the difficulties in the way of getting rid of this state of things. The world is much fuller than it was in the old handicraft days; life moves much faster; people want things more quickly and in greater quantities. Much is lost by this, but much also is gained. Labour is saved by machinery, prices are lessened, more work is found for those who are in need of work. Morris seems still to have been under the old economic delusion of the first opposers of machinery, that it was taking the bread out of the mouths of the labouring classes; though it is almost a truism to say that where ten men were employed before machinery a hundred are employed now. Morris had the idea, which finds expression more than once in these essays, that every man in the world has, by the fact of his existence, some mysterious "right" to have paying labour found for him; an idea which has captivated a good many other muddle-headed philanthropists, Ruskin among them. Argument would be thrown away on people who are capable of reasoning thus—if reasoning it can be called; the point to be noted is that Morris, with this idea in his head, was fighting against and vilifying the very means which provides work for numbers who would not otherwise have it. Could he have stopped machinery, as he professed that he would like to do—perhaps he would have wavered if it had come to the actual point and possibility of doing so—the first result would have been that he would have filled the workhouses. A certain minority of good craftsmen would have been made happier; the rank and file would have had to starve. As we observed the other day in speaking of the new venture of the Guild of Handicraft in setting up their workshops in a remote village, the steam which they despise is what alone, by means of the railway, could make their scheme a commercial success; and that any such scheme *must* be, to be carried on at all. Many manufacturers may be too greedy of gain; but a project must at all events pay, with whatever artistic motives it may be started

* "Architecture, Industry, and Wealth." Collected Papers by William Morris. London: Longmans, Green, & Co. 1902.

or it must soon go to the wall. And indeed it is whispered that those who had dealings with the decorative and furniture establishment founded by Morris, did not find them any less keen upon money than firms of more prosaic ideas; they aimed at producing good work, no doubt, but they certainly wanted to be well paid for it. And as to the meanness of everything connected with machinery, we should be prepared to maintain that a locomotive engine is a finer and more inspiring piece of metalwork than anything that any Mediæval smith ever produced.

"Lord, send a man like Robbie Burns to sing the Song o' Steam"—

as Mr. Rudyard Kipling's Scotch engine-driver said. "M'Andrew's Hymn" was not published till after Morris's death; one would have been curious to know what he would have said to it!

Machinery cannot produce art, however: that we devoutly believe; art must be the work of the individual hand. The way out of the puzzle may, after all, be a pretty simple one; let people give up trying to produce art by machinery, and content themselves with trying to produce good practical useful work. This has a beauty of its own, after all. In making a locomotive, to return to our former illustration, there is no attempt to treat it artistically; any such deliberate attempt would probably be a failure; yet it turns out as an exceedingly fine and impressive object. Nor do we believe that good workmen, employed in a first-class engine factory, are without interest or pride in the results of their work. Less important kinds of piecemeal work—pin-making and needle-making for instance—must be dull enough; so is sweeping a room; yet, as gentle George Herbert said

"Who sweeps a room, as to Thy laws,
Makes that, and the action, fine."

And it is impossible in these days to do without this division of labour; it is not merely, as Morris seems to have thought, a question of competition; it is a question of supplying the public demand in the quickest and most economical manner. It is for the general good in the long run. How would poor persons who have to use pins like to have to pay—say 3d. a dozen for them?

Morris was never tired of girding at the evils of "civilisation"; one wonders whether he ever attempted to realise what daily life was really like in the Middle Ages: life in the midst of wars of the most savage character; of violence and frequent murder; insanitary and filthy houses; bad roads and almost an impossibility often of communication. The Mediæval Ages produced the cathedrals, and we can produce no buildings equal to them, or have not done so; but people forget that we have only the remains of the architectural greatness of the time, not of its meaner aspects. Suppose we could see all the realities of life in a back street of a mediæval town reproduced; would they not be even worse than those of a back street in London, over which at all events some degree of sanitary legislation has control? Morris laments, as a sign of the vulgarity of the times, that now there are two languages talked in England, gentleman's English and workman's English; that there are a great many people in the land "who are doomed by the accident of birth to misplace their H's" (Morris writes "aitches," a word which dictionaries do not recognise); this, he thinks, "is barbarous," and this also, in some wonderful manner, is chargeable on the modern spirit of competitive commerce; he does not explain how. We may remark however, that the misplacing of the aspirate is not the special privilege of the artisan class whom Morris championed; it is prevalent throughout the trading class, and—must it be confessed?—one could sometimes sweep up a good many dropped after a meeting of architects. It is not the accident of birth, it is a matter of education; and if it were a class difference, would that, after all be peculiar to modern life? Did Morris really suppose that, in the Middle Ages, the "seigneur" and the "knave" spoke the same tongue? Was not the class division far more marked, even by costume, than it is now? And do we not read in Mallory's "Morte d'Arthur," when a knight deigned to ask a question of two labourers working in a field, the historian's naïve comment—"Then were they afraid, when they saw a knight." A pretty idea that gives one of the courtesies of the great to the lowly in the Middle Ages.

The idea of the dignity of hand-labour is a favourite one with Morris and his followers, and is a wholesome one in itself, but it is pushed too far and in a one-sided spirit. That carpentry or masonry are nobler and more interesting occupations than ordinary clerk's book-keeping we quite agree. But when Morris says, after mentioning a discussion as to whether her son could take to cabinet-making (decided in the negative), "Why in the name of patience should a carpenter be a worse gentleman than a lawyer?" he only envisages one half the question. An educated gentleman may be a carpenter, but a carpenter need not be an educated gentleman; a lawyer, to acquire any position, must be. That is where the *crux* of the question comes. Being a good lawyer does presuppose a liberal education and a certain amount of mental culture and of refinement of manners; being a good carpenter does not necessarily presuppose that. Building craftsmanship is an admirable thing in itself, but it does not necessitate a high degree of mental culture, and therefore it is not to be expected that it will generally be regarded as a suitable profession for the best educated class of men.

Morris's opinions about architecture, of course, amounted merely to a general condemnation of everything done in the present day (except the work of one or two of his own friends), and of all architecture of the past except Gothic and Byzantine. In Greek architecture even he could see nothing, and as to Roman and Renaissance no words were bad enough for them. "The new Church of St. Peter still curses the mightiest city of the world;" the whole extraordinary, almost romantic, history of the slow evolution of that famous building being totally without interest for Morris. St. Peter's has great faults; partly due to a mistaken system of scale in dealing with Classic materials, partly to the work of Maderno in adding to the original plan; but when all is said, that dome with its lantern—

"Michaelangelo's dome, that had hung the Pantheon in Heaven"—

is one of the great things of the world, and we should be sorry for any architectural purist who did not feel that the first sight of that famous cupola, familiar in how many a picture, with all its train of associations, was a kind of epoch in his life.

In Morris's complaints about the average house of the day, especially in a picturesque site, we feel a good deal of sympathy. Bournemouth, he observes, "is a district of rich men's houses."

"There was every inducement there to make them decent, for the place, with its sandy hills and pine trees, gave really a remarkable site. It would not have taken so very much to have made it romantic. Well, there stand these rich men's houses among the pine-trees and gardens, and not even the pine-trees and gardens can make them tolerable."

As far as we remember, the Bournemouth houses are sadly commonplace, though there may be exceptions. But the question is, would any houses of any kind, built by modern architects, have pleased Morris any better?

Morris's Essays are the expression of enthusiasm, of dogged personal conviction, and of a philanthropic passion for what he believed to be for the good of mankind. But they are not the words of wisdom, and were hardly worth collection in a permanent form.

THE LONDON BUILDING ACT AMENDMENTS.

WE have already referred to the proposed amendments of the Building Act which were foreshadowed at an earlier meeting of the London County Council, the proposals having been made in consultation with the Home Office. It is now to be presumed that the proposed amendments will have the support, not only of the London County Council and the Home Office, but also of the City Corporation, for, in a Report issued last week by the County Purposes Committee of the City, that body reports that it concurs with the views expressed by the British Fire Prevention Committee, as already published in our columns, and hence similarly recommends retrospective legislation where the safety of human life is concerned. The able Report by the County Purposes Committee, we should add, claims the attention of all interested in fire protection; and we are glad to see that the communication of the Fire Prevention Committee referred to has had the favourable consideration of the representatives of the City.

We have now before us a summary indicating the general lines of the proposed amendments of the Act as approved by the London County Council, and we find that the proposals may be divided into six groups.

The first group deals with the provision of an adequate means of escape from any new building of which the level of the upper surface of any floor is of a greater height than 50 ft. above the road. This is practically a revision of Section No. 63 of the present Building Act, in which the level of 60 ft. is the requirement.

In the second group we find the important question of principle, *i.e.*, the requirement of giving facilities for escape to any *existing* building other than a dwelling-house occupied by not more than one family which exceeds the 50-ft. limit of height just mentioned. Such alterations as are necessary for providing means of escape are to be completed before January 31, 1908—*i.e.*,

within four years of what we would assume to be the passing of the Act. No one can contend that the principle is not a sound one, but the practical execution of this requirement for old buildings will be very difficult, and we are not sure whether the Council have allowed sufficient time for the alterations necessary. We think that, for such a far-reaching requirement, affecting practically all business property and all tenement houses, at least ten years should be allowed from the date of the passing of the Act.

The third group relates to a provision of adequate means of escape from fire in buildings which are not dwelling-houses, and are not occupied by more than one family, but in which sleeping accommodation is provided for more than forty persons. (This figure, by an amendment, was altered to "thirty" at the County Council meeting on Tuesday.) This, again, is a requirement of a most far-reaching character.

The fourth group deals with amendments to Clause 74 of the Building Act which relates to the separation of one building from another, and sets of rooms or tenements from one another; and we quite agree that amendments in this part of the existing Act are much called for.

The fifth group deals with the materials to be used on the roofs of projecting shops in front of dwellings, and the passages so often provided through these shops from the dwelling-houses to the street. Here, again, we can only commend what the County Council advises, for the shops in front of dwelling-houses make the latter veritable fire-traps.

Lastly, in the sixth group, there are to be various provisions as to the construction of lift-shafts in buildings that are not dwelling-houses. This group deals with the principle of the prevention of the spread of fire rather than with any question of the safety of life, although both these questions have to be considered together. There is no doubt that the lift-shaft of the modern business premises is the weak point of even the best construction and planning, and it is on account of such lift-shafts that well-constructed buildings are frequently gutted.

As seen above, with the exception of the question of lifts, all the proposed provisions are solely for the safety of life. The important subject of better construction is really not touched upon; but the amendments, as far as they go, if carefully drafted and wisely applied, should be a great benefit to the Metropolis and the public; and we would only warn the legislators against making any part of the proposed Amendment Act have the appearance of panic legislation.

Panic legislation has frequently been brought about after a catastrophe such as the Queen Victoria-street fire, which may be taken as the direct cause of the new proposals. It is not panic legislation that we require, but an improvement on the existing rules and regulations to accord with modern demands, without affecting too seriously the vested interests or, perhaps, making certain classes of business impossible in the Metropolis.

On a future occasion we may deal with the proposed Amendment Act in detail, but the outlines we have presented will give those primarily interested an idea of the important character of the new suggestions.

NOTES.

The Report on Trades Unions.

THE Report on Trades Unions in 1901, just published as a Parliamentary Paper, contains some interesting figures. The increase in the numerical strength is only 12,166, taking the Trades Unions as a whole. The increase, moreover, has been confined to the mining and quarrying industries, an increase of 9,480; employees of Public Authorities, 5,490; and the food and tobacco trades, each 2,000. But this increase of 18,970 has been reduced as shown above, by 2,804, owing to the diminution of the number of members in the building and metal trades. The income, however, of the 100 principal Trades Unions shows an increase of 100,000*l.*, but their expenditure also has increased by 181,000*l.*; but their accumulated funds now stands at 4,161,916*l.*, about 400,000*l.* more than at the end of 1900. The total membership seems now to stand at the figure 1,922,780, of which 120,078 are women and girls. It would be interesting to ascertain the reason of the decrease in the number of members connected with the building industries.

Liabilities of Water Companies.

AT a time when public attention is being much directed to the question of water and Water Authorities, the case of Beaumont *v.* Mayor, &c., of Huddersfield (see our last issue, page 563), has some points of interest. The Corporation, which was the Water Authority, endeavoured to excuse itself from complying with the provisions of its Act of Parliament (under which, in consideration of the Corporation having the right to the water from a certain stream, it was compelled to supply the owners of mills abutting on it with a certain minimum supply), by pleading the act of God—viz., a drought. Apart from the facts proved in the case, and on which the decision of the Court against the Corporation turns—viz., that they had not taken sufficient care in insuring the regular flow of water down their aqueduct—it is certainly difficult to see how they could successfully set up this defence as long as they were selling water elsewhere. Whilst touching on the question of water supplies we must draw attention to the effect the extended creation of Water Authorities is having on the value of landed property. Where the company or authority becomes entitled to water which flows in known and defined watercourses, as in this case, the Act of Parliament under which they derive their powers always secures compensation to the landowner, either in the shape of a free water supply or pecuniary compensation; but the law does not recognise any rights to percolating water, and hence, if the establishment of wateworks drains the wells of the district, the landowners, although they suffer a substantial depreciation of their property, have no remedy. Where the water is taken from the country to supply the needs of a distant town this hardship is accentuated. In many parts of Kent the wells have run dry on the establishment of waterworks' pumping-stations, and the landowners are compelled to buy back their own water from the companies at high rates and often only obtain a water of inferior quality owing to hard and soft water having been blended in the companies' reservoirs. If the Metropolis is to stretch its arms some thirty miles into the country, some change in the law seems necessary to afford the landowners compensation for the abstraction of the water which has been used by them from time immemorial.

Workmen's Compensation Cases.

THE Court of Appeal have at present under their consideration some seventeen appeals under the Workmen's Compensation Act, and, as usual, when this measure comes before the superior Courts, the manner in which it is drafted draws down judicial censure, and during the hearing of one of the cases Lord Justice Mathew described the Act as calculated "not to give any guidance to anybody." The case of Wagstaffe *v.* Perks & Son is of interest to builders. A builder having had to pay a claim made upon him for the death of a workman in the employ of his sub-contractor was claiming over against his sub-contractor to be indemnified for the sums so paid. It will be remembered that the House of Lords recently decided in the case of Cooper *v.* Davenport & Winstanley that such a claim could be made under Section 4 of the Act in cases where the sub-contractor was an "undertaker," that is, where he was undertaking the construction, alteration, or repair of a building. Many decisions have had to be given of what is to be deemed "construction and repair" for the purposes of this definition. Thus in Hoddinott *v.* Newton Chambers the House of Lords decided the addition of certain stays with the object of strengthening the building to amount to construction, and in Dredge *v.* Conway, Jones, & Co., whitewashing and painting were held to be repair. The present decision is an authority to the effect that where a sub-contractor undertakes some substantial part of the work on a building (in this case the work being the plastering), he is an undertaker, although the material is not supplied by him. The case of Smithers *v.* Wallis, to the effect that a groom-gardener is within the Act if injured whilst driving his master's carriage three and a half miles from where he was employed, is the first case to be decided in the Court of Appeal on the Amending Act of 1890 applying workmen's compensation to agricultural operations. In these columns we need only shortly draw the attention of employers generally to the fact that the terms of this Act widely extend their liability. Thus when any servant is employed mainly in agriculture, by which we presume the Legislature meant rather more in agriculture than in any other employment, his employer becomes liable for any injury that may happen to him when "partly or occasionally" employed in other work anywhere, and as agriculture includes "horticulture, forestry, the use of land for any purpose of husbandry, the keeping and breeding of live stock, poultry, or bees, and the growing of fruit or vegetables," it will be seen what a vast extension of the principle this involves, including even in certain circumstances domestic or menial servants.

Tenants in Flats.

BY that very large class of persons, the dwellers in flats, the case of Jaeger *v.* Mansions Consolidated, Limited, will be studied with the greatest interest. The case has at present only been argued on a preliminary objection that the facts as stated by the plaintiff disclosed no case in law, but, shorn of its technicalities, the principal point in

the case is the rights, if any, which tenants of flats have against the landlord when other tenants are guilty of immoral conduct on the premises. The action was brought on the ordinary covenant in the lease "for quiet enjoyment," and each tenant was also bound by a clause in the lease "not to permit" the premises to be used for "any unlawful or immoral purpose," and it was argued that even if the covenant for quiet enjoyment was not sufficient, the tenants were in any case entitled to the benefit of the tenants' agreements in relation to the general scheme for the user of the premises. The learned Judge, Mr. Justice Buckley, has held that the covenant for "quiet enjoyment" only relates to some physical interference with the use of the premises by the landlord or by some person claiming under him, and not to its comfortable enjoyment. The Court, however, decided that the case could proceed, as there was an allegation that there was some physical interference with such things as the lights on the stairs, and that possibly the landlords could be effected with liability for this action on the part of other tenants, either as directly authorising them by receiving the rents, or that by so receiving the rents the landlords were waiving a breach of covenants to the benefit of which, as part of the general scheme, each of the tenants was entitled. The final decision of the case will be watched with interest; but in face of the decision that the covenant for "quiet enjoyment" does not extend to disagreeable noises, sights, or sounds, tenants who realise the terrible inconveniences which attend such a user of the premises will do well to see that their lease contains an express covenant rendering the landlord directly responsible.

American Mountain Railways.

To people who live in a comparatively level country like England, the enterprising methods of American railway engineers seem particularly remarkable. The elevation attained by the Pacific Railway in the United States is completely outclassed by the Oroya Railway in Peru, which was built by a well-known firm of American contractors. This unique line starts at the seaport town of Callao, and after passing the city of Lima, it traverses the low hills at the foot of the Andes and reaches Chosica, 2,800 ft. above sea level. At San Bartolomé, forty-seven miles from the sea, the elevation of 4,959 ft. is reached, and then begins the famous switch system introduced by Henry Meiggs. The method here followed is to run the train up one arm of a "V" and then to back it up the other arm. A succession of such switch lines carries the train up to the wonderful Agua de Verrugas Bridge at an altitude of 5,839 ft. Proceeding thence to Matucana, 7,708 ft., and by another zig-zag V-switch system through tunnels, over steel viaducts, and along the sides of precipitous mountains, Aruri is reached at a distance of 76 miles from Callao, and 10,094 ft. above the sea. Then comes a succession of "V" tunnels, leading up to the Infiernillo Bridge, hanging between the mouths of two tunnels, while the turbulent waters of the Remac rage in the depths below. The next points are Chicla, 12,697 ft.; Casapalca, 13,606 ft.; and then the tunnel of Galera is entered at a height of 15,665 ft, the highest point on the line, and the highest hitherto reached by any railway. The middle of this tunnel is the true water-parting between the Atlantic and the Pacific, drainage water from one mouth running to the former and from the other to the latter of these oceans. Beyond the tunnel the line runs on a down gradient to Oroya, which is only 12,178 ft. above sea level, and is 138 miles from Callao. A concession has been granted for an extension of the line to the mining town of Cerro de Pasco, some eighty miles beyond the present terminus. Another high mountain railway is now being projected in the northern part of Peru, to commence at at Piura, a few miles from the coast, and to proceed through a recently-discovered pass situated north-west of Iquitos, to the extreme head of navigation on the Amazon. Through the pass in question it is believed that a railway can be carried at a height of not more than 7,170 ft. above sea level.

The Rio Grande River Bridge.

A STRIKING example of a cantilever-arch bridge has lately been completed for the Pacific Railway of Costa Rica. The structure crosses a cañon with almost vertical banks, at a level of not less than 340 ft. above the water, and has a total length of about 685 ft. Although surpassed in magnitude by the Garabit Viaduct, the Mungsten Bridge, and the new bridge over the Viaur, the Rio Grande Bridge is of interest as the greatest span in Central America, as well as on account of the peculiar engineering problems attending its construction. In some details the design of the bridge differs from that usually adopted in similar structures, but its general form is similar to that illustrated in fig. 15, p. 386 *ante*. The skewback shoes are made entirely of riveted steel, and the pin bearings are thoroughly braced by solid ribs which serve to distribute the load over a base plate of considerable area, made in two planes, one being normal to the pressure from the completed arch and the other horizontal, so as to add to the stability of the shoe on the masonry seat. The pins are of 15 in. diameter, and, owing to the setting of the shoes, they are at right angles to the plane of the trusses. Theoretically the structure comprises a pair of spandrel braced arch trusses continued beyond the skewback piers to form cantilever arms 47 ft. 6 in. long supporting the river ends of the two approach spans, but, in fact, the top chord is a continuous riveted member. This constructional detail was carried out to permit the erection of the centre arch from each abutment with merely vertical anchorage. The bridge contains over 932 tons of steelwork, which was built in the shops within one month, and was erected by fifty men in three months—a remarkable engineering achievement that ought to be attentively considered by bridge-building firms in Great Britain.

Electric Lamp Photometry.

DR. J. A. FLEMING read an interesting and exhaustive paper on "The Photometry of Electric Lamps" to a crowded meeting of the Institution of Electrical Engineers last week. He began by pointing out the discrepancies between tests made by standardising laboratories and those made by manufacturers, and suggested that it was due mainly to the want of a definite standard of light. He classed as primary standards the Violle platinum incandescent standard and the Vernon-Harcourt Pentane 1-candle flame standard, and as secondary standards the Hefner lamp, the 10-candle pentane lamp, and the Fleming glow lamp. As the Violle standard is non-existent, it seems that we are left with the pentane lamp as our only standard. If manufacturers agree with Dr. Fleming, this would be a partial explanation of the discrepancies in tests. We have not yet come across any one who can give us the formulæ for correcting the candle-power of the pentane lamp for variations in the height of the barometer, the amount of carbon dioxide in the atmosphere, and the humidity of the atmosphere. Yet accurate formulæ for the Hefner lamp are well known and are given by Dr. Fleming in his paper. When we have had occasion to make photometric tests we send a few standard glow lamps to be calibrated to the German Imperial Standardising Laboratory at Charlottenburg, which we keep as primary standards. Lamps calibrated there eight years ago agree within half a per cent. with lamps calibrated recently. It is true they calibrate them in hefners, but if we take the Post Office value of the English candle—namely, that it is 1·14 hefners—it will be seen that any one can for a few shillings get an accurate primary standard. Dr. Glazebrook spoke hopefully of being able to set up a photometric department at Bushy House shortly, and so there will soon be no excuse for those manufacturers and professors whose English candle is less than the Continental hefner or the American "English Standard Candle." In the latter part of his paper Dr. Fleming gave some very interesting methods of comparing lights of different colours by means of "flicker" photometers. Sir W. Abney, however, threw doubts on this method of photometry, pointing out that when there was no flickering it did not mean that the intensities of the two illuminations were equal. He also pointed out that the principle of the "discrimination" photometer described was wrong, as "acuteness of vision" varies most decidedly with colour.

The Churches of All Hallows and St. Edmund the King, Lombard street.

THE Bishop of London is about to issue a commission to enquire into and report upon the expediency of uniting into one benefice the rectory of All Hallows and that of St. Edmund the King and Martyr with St. Nicholas Acons, Lombard-street. Wren rebuilt the two churches, the former in 1694 at a cost of 8,058*l.* 15*s.* 6*d.*, the latter in 1690 at a cost of 5,207*l.* 11*s.* The tower and spire of St. Edmund's form, in the opinion of many, one of the most pleasing of Wren's compositions. The fabric was restored in 1865 by Butterfield, and again in 1880. The figures of Moses and Aaron in the altar-piece are by Etty (1833). The two fine stained glass windows representing St. Peter and St. Paul, by Nixon & Ward, of Soho, were removed from the north to the south side about twenty-two years ago. Mr. C. Hardgrave's design for the east window was exhibited in the Royal Academy rooms in 1886. Messrs. Arthur Lee & Bros., of Bristol, carried out improvements of the chancel in 1887. The organ is by J. C. Bishop, 1833. The register records the marriage on August 9, 1716, of Addison and the Countess Dowager of Warwick and Holland. In the old

church was buried, 1563, John Shute, architect and paper-stainer, whom the Duke of Northumberland sent to Italy in 1550, and who wrote a folio volume entitled "The First and Chiefe Groundes of Architecture." The design of All Hallows, which has always been hidden by houses, evokes no particular comment, but the interior, in its practical qualities, is eminently adapted for congregational worship, and contains a beautiful font with cover in white marble (a relic from St. Bene't Gracechurch) and some fine carving; the pulpit, sounding-board, and the lower part of the reredos are ascribed to Grinling Gibbons. The ten windows were designed by Mr. Alexander Gibbs; at the restoration of the fabric in 1870, under the superintendence of Messrs. Francis the organ (by Harris, 1695) was re-built by Messrs. Gray & Davison; ten years later the interior was re-decorated and lighted from the roof. In 1865 the curiously-carved stone gateway was removed from the street into a vestibule beneath the tower. The tower, 21 ft. square on plan and about 85 ft. high, has a porch with two Corinthian columns and an entablature on its south side; it is finished with a simple cornice and a high parapet, whereof the upper half has an arcade of well-designed plate-tracery work. Sir John Vanbrugh, the architect, was baptized in the church of St. Nicholas Acons, and the registers contain many entries relating to his family. St. Edmund's, having formerly belonged to Holy Trinity Priory, by Aldgate, was bestowed at the Suppression upon the Archbishops of Canterbury, who, alternately with the Crown, present to its rich living. Its demolition was contemplated a few years since, and now All Hallows is marked for the same fate.

Flueless Gas Stoves.

A CORRESPONDENT has sent us a letter protesting against our condemnation of *all* flueless gas stoves in dwelling-rooms, and informing us that he has a flueless gas stove of a certain brand in use in his bedroom, "with closed windows all night," which is giving him complete satisfaction. We do not doubt the good faith of our correspondent, but we cannot recommend the use of any flueless stove in a bedroom. Flueless gas stoves of the best description are permissible in halls and passages, because the atmosphere in such places is constantly changing, foul air going out and fresh air coming in; but, as we have repeatedly pointed out, they should not be used in dwelling-rooms. We cannot state the case against flueless stoves more clearly than by quoting the following paragraph from the lecture delivered last week by Professor Lewes:—

"A cubic foot of coal gas on its complete combustion yields 0·52 cubic foot of carbon dioxide and 1·3 cubic feet of water-vapour. If you do not mind breathing hot, polluted air, highly charged with water-vapour, and getting chilled with cold walls, a Bunsen burner stood on the floor is the most effective method of getting the whole of the heat of combustion into the air of the room, and no flueless stove can do more than this. In order to get something to sell, stoves are constructed in which some of the water is condensed, and the public are gravely informed that this removes all deleterious products. But it is impossible to get away from the fact that if healthful heating is to be obtained it is the solid objects and walls of the room that must be heated, and not the air; and although some of the heat is lost thereby, a flue to take off all the products is an absolute essential."

Chichester Market Cross.

THE Mayor of Chichester appeals for subscriptions to the repair of the interesting market cross of Chichester, dating from 1500. Monuments of this kind are of more than local interest; and as we are assured that it is not proposed to "restore" the cross but only to keep it in repair, we may recommend the subject to the consideration of those who are interested in the preservation of old English monuments of this kind, of which not very many are left.

The Modern Sketch Club.

THE exhibition of this Club at the Modern Gallery in Bond-street shows a good deal of variation of opinion as to what constitutes a sketch, some of the exhibits being really finished drawings. If an exhibition is to illustrate sketches, which constitute a special form of art with special limitations, it is better to keep to what are really sketches—broad studies of effect and composition without finish. There are, however, a good many works which come properly under the head of sketches. Among the best of these are Mr. A. K. Brown's "Moorland" and "Upper Clydesdale" (11 and 23); Mr. H. Bennett's "A Lincolnshire Dyke" (7); Mr. Muirhead's two sketches in oil, "The Mill Pool" and "The Green Lane" (32 and 37), and Mr. Champion Jones's "The Beach, Aldeburgh" (43). Several figure sketches by Mr. E. Slocombe are interesting studies of attitude, character, and costume; so also is Mr. Hal Hurst's "Vanity Fair" (77), a girl before a looking-glass. Mr. Fraser's "Moonrise" (48), a good work in general, shows a portentously large moon; but this is the way with painters; the real scale of the moon in the landscape seldom satisfies them.

Workington Public Library Competition.

WE are sorry to find—or perhaps we ought rather to say we are glad to find—that we did an injustice to those concerned in the management of the above-mentioned competition by giving circulation to the statement of an intending competitor, who seems to have made a complaint without even properly reading the advertisement of the competition, where it was stated that the deposit fee would be returned if a design was sent in, and where the name of the assessor was given. The architect who wrote to us actually complained that he had to expend a guinea in order to find out if there was an assessor. Unfortunately this is so frequently the case that we saw nothing improbable in the statement; but in this case it is not so; everything is being done quite fairly. We are always ready to support architects against any exactions by competition committees, but we must at least ask that they will be sure of their facts before complaining.

PATENT OFFICE EXTENSION.—The Commissioners of H.M. Works and Public Buildings notify their intention of introducing a Bill in the course of next Session of Parliament in respect of a proposed further enlargement of the Patent Office in Southampton-buildings. They seek for powers to acquire certain lands, houses, and premises bounded upon the north by No. 6, Furnival-street and a portion of Staple Inn, upon the south by No. 13 in that street and Nos. 1 and 2, Took's-court, upon the east by Furnival-street, and upon the west by the existing Patent Office and the garden of Staple Inn (south court). Some of the area thus scheduled is now garden ground at the rear of Furnival-street, and the projected new buildings will form an addition on the east side to the Patent Office buildings which face the terrace and garden of Staple Inn.

COMPETITION FOR HOUSING SCHEME, BERMONDSEY.

MR. JOHN SLATER, F.R.I.B.A., the assessor appointed by the Metropolitan Borough of Bermondsey to report on the designs submitted in this competition, has now issued his award. The first place is given to the design by Messrs. Brocklesby, Marchment, & East, of Merton, Surrey; the second to Messrs. Humphrey Davis & Co., 8, Lawrence Pountney-hill, E.C.; and the third to Messrs. Sills & Leeds, Norfolk-street, Strand. These and other designs are on view this week at the Rotherhithe Town Hall, and may be seen on Friday from 10 a.m. to 8 p.m., and on Saturday from 10 a.m. to 5 p.m.

The site, known as the Fulford-street area, is a slightly irregular oblong, about 180 ft. by 270 ft., the ends facing nearly due north and south, and the sides nearly east and west. It is bounded on the north by Rotherhithe-street, on the east by Seven Step-alley, on the south by Paradise-street, and on the west by Fulford-street. In a scheme of this kind the arrangement of the buildings on the site is of prime importance, and it is surprising that so many competitors have failed in this preliminary part of their work. There are many designs which are clearly out of court for this reason. Much valuable time would have been saved if competitors had bestowed a little more attention to this point, and had borne in mind the simple truth that no amount of ingenious detail can compensate for a bad block plan.

The authors of the first premiated design (No. 23) have utilised the site in a very simple manner. Four blocks are placed across it from east to west, and are arranged in two pairs, separated by a central garden varying in width from 45 to 70 ft. There is a yard or street 40 ft. wide between the two blocks in each pair. Nothing could well be simpler, but the arrangement has one radical defect—one side of each block faces almost due north, and consequently the rooms on these sides, including many living-rooms and bedrooms, will be sunless throughout the year. The central garden will also suffer from this arrangement, as the sunshine will be largely intercepted by the block to the south of it, which is 46 ft. high to the curb of the Mansard roof. On the other hand, there are no small courts or narrow passages, but ample room for air to circulate around every block.

Each building is five stories high, the uppermost story being formed in the Mansard roof. In each building there are three staircases, leading to as many balconies on each upper floor. In three blocks, each balcony gives access to four tenements. In the fourth block, adjoining Paradise-street, the three balconies serve five three-room tenements, five two-room, and one one-room on each floor. As tenants of single rooms are often of a lower class than tenants who can afford two or three rooms, it is not a good plan to allow the different kinds of tenements to be approached by the same stairs, as in this design.

The tenements themselves are cleverly planned without waste space. The balconies overhang the scullieries, water-closets, and entrances, and do not interfere with the lighting of the living rooms and bedrooms. Each tenement has windows on both sides of the blocks, so that through ventilation is obtained. The elevations are simple and suitable, a certain amount of character being given to the four principal fronts by three projecting bays with gables, following the lines of the Mansard roof.

In the design placed second (No. 16) there are also four blocks, one running from east to west adjoining Rotherhithe-street, and three at right angles to it extending from the rear of the first block to Paradise-street. The three longer blocks come too near the other, two of them within 17 ft.; this is 13 ft. too little. The tenements are arranged in five stories, those on the upper floors being entered from recessed balconies as in the first premiated design. With the exception of the end portions, the three main blocks are alike, each having three staircases. The one-room tenements are mixed up with the others. The details are carefully considered, although the planning is not quite as compact as in the successful design. The elevations bear a general resemblance to those of Messrs. Brocklesby, Marchment, & East's design, but the projections are hipped instead of being gabled.

The design placed third (No. 14) is less satisfactory. There are four blocks placed across

the site as in the first premiated design, but return wings are projected in the rear of each block, so that each pair forms an almost complete quadrangle; in three out of the four cases the spaces between the wings are only 20 ft. wide. This is a serious defect. Seven sketches of drawings are shown, but three of these are not coloured, and one is not even fully inked-in. The buildings, according to the plans, section, and front elevation, are intended to be five stories in height, but the back elevation is drawn with six stories. Some of the fireplaces are not well placed, but the elevations are both simple and effective.

The authors of Design No. 1 (shown on nine stretchers) have produced a good block plan. Five blocks are shown, one along each end, and three between and nearly at right angles to them. But the tenements are entered from the staircase landings in the middle of the buildings, and are placed back to back, so that there is no through ventilation. There are other defects, but the back-to-back arrangement is enough to condemn the design.

Design No. 2 has also five blocks, arranged as in No. 1, but with one of the side blocks produced to Rotherhithe-street. The ends of the four external blocks are too close to each other, the spaces ranging from about 14 ft. to 25 ft.; the circulation of air around the central block is, therefore, seriously impeded. The balconies are carried over the windows of many of the living-rooms, and would render these rooms dark and dreary. We did not notice any elevations or sections.

The seven stretchers of design No. 3 tell of a good deal of wasted labour. The planning shows little knowledge even of the elements of tenement design. There are four blocks—two wide and two narrow—all with long central corridors. Design No. 4 is rather better. Four blocks are shown, parallel respectively to the four streets, and as this did not give the required accommodation, nine projections are built out into the central court; each projection contains a tenement on each floor and part of the staircase. The rooms between the projections would be deficient both in light and air. There are no balconies, the tenements being entered from the landings of the stairs.

The author of Design No. 5 has economised time and paper, for he has attempted to explain his scheme on two stretchers. The block plan is good, consisting of three parallel blocks running from north to south, and at least 40 ft. apart. There are no balconies, and this omission has led the author to provide a greater number of staircases than would otherwise have been necessary. It is a point in favour of this design that tenements of different classes are kept separate. Some of the sculleries are approached only through the living-rooms. The elevations are lacking in variety. Design No. 6 shows seven blocks placed on the site in an unsatisfactory manner. No. 8 is conspicuous for its huge and ugly gables. No. 9 has four blocks parallel respectively to the four streets, and rather too near each other at the ends, but better in this respect than some of the other designs; the staircases as well as the tenements have through ventilation. No. 10 has four blocks arranged as in the preceding design, but in the central quadrangle two smaller blocks are placed, one end of each being within about 10 ft. of one of the external blocks; the details of the planning are better, and the elevations are pleasing, but rough-cast is scarcely appropriate for Rotherhithe. No. 11 is a monument of wasted labour; it consists of eleven stretchers, and the block plan is a notable example of misapplied ingenuity. On the ground floor there are twenty blocks, but these blocks are connected on the upper floors into two groups, each shaped like a double H, thus II.

The block plan of No. 12 is good—three blocks running north and south—but the planning generally is not of equal merit. Nearly all the sculleries are entered only from the living rooms; the external balconies block the light of many of the bedrooms. The most conspicuous features of the elevations are the chimney stacks, which form an almost continuous line along the ridge; the main stacks are about 50 ft. long! No. 13 has seven blocks, too close at the ends; the tenements are back to back and are entered from the staircase landings and not from balconies; some of the larger tenements have dark passages leading from the living-rooms to the bedrooms.

No. 17 is one of the few good designs submitted. There are five blocks arranged as in No. 1, but not as well spaced. The general planning is, however, much better. There are only two staircases to each block, and these might with advantage have been a little wider. The tenements are entered from balconies. Those on the fifth floor run up into an ordinary span roof, and are furnished with dormers; this reduces the height and cost of the buildings, but also reduces the value of the tenements. The block plan of No. 18 is remarkably like that of the first premiated design, but in other respects the planning is inferior; there is a good deal of waste space in the through stairs. No. 20 has a similar block plan, but the balconies extending nearly the whole length of each front elevation are a serious defect. No 19 has three parallel north and south blocks and no balconies; many of the tenements are back to back, and the water-closets are not well placed. No. 21 has four blocks arranged on the site, as in the second premiated design; in nearly every case the scullery of the larger tenements forms the entrance lobby and the only approach to the living-room and bedroom; the one-roomed tenements are grouped in the middle of the block facing Rotherhithe-street, and are approached by a separate staircase; there are four of these tenements on each floor, each group having a joint scullery; both the plans and the elevations are above the average.

On the whole, it cannot be said that the designs reach a high level of excellence, but we agree with the assessor that the best has been placed first.

THE MANUFACTURE OF "STOCK" BRICKS.

IT is said that the method of manufacturing stock bricks is to undergo a complete revolution; that the manner of moulding is to be entirely different to that which now obtains in all but one yard, where this different process is being adopted; that the method of drying the raw bricks is, by artificial means, to be enormously accelerated, a day being occupied in that part of the manufacture instead of some weeks or months; that the raw bricks are to be burnt in closed kilns instead of "clamps"; and that the finished brick is a better "stock" than bricks of similar kind hitherto used.

Such an announcement will, naturally, attract the attention of almost all London architects, as well as those practising in the South-East of England generally. Before venturing an opinion on this suggested revolution and its effects, it may be well to remark that we have seen the whole process in operation, and it has not yet passed beyond the experimental stage. The experiments are on a large scale, and the installation is turning out 20,000 bricks per day: so it is possible to pass judgment on the results as far as they have been obtained.

It is desirable, however, to first of all define what a stock brick is. Every architect thinks he knows one when he sees it; but different localities produce different kinds of stocks, and there is the question as to whether the revolutionary method we are about to describe will apply universally to those districts. In legal disputes, judges have had considerable difficulty in defining what a stock brick is, and until the decision of Judge Martineau, in 1898, it is doubtful whether any real guidance could be relied upon. In that case a firm of builders in Hove, near Brighton, maintained that whilst they ordered "stock" bricks from a brickmaker in East Grinstead, they only received what they considered to be "place" bricks. They pleaded that "stock" bricks are not taken up at random from the clamp, as are "place" bricks, but that they should be selected. The brickmaker, on the other hand, contended that "stock" bricks meant bricks burnt in a clamp and taken at random. The judge, after hearing the arguments, decided that "stock" bricks meant selected bricks from the clamp.

We shall not attempt to traverse that judgment. At the same time, there are many points which it does not cover, and we may consider some of them. If there is any predominating feature the architect and builder is of opinion that a "stock" brick should possess, it is its colour. No one who is familiar with "stocks" will claim that there is much uniformity about their tint, but what is aimed at is a deep yellow (called golden) when the wall made of them is looked at from a distance. But the colours from almost any clamp are as diverse as can well be, and a rough classification based on this peculiarity, together with certain physical properties, has been generally accepted. Discarding "bats" and "shuffs," we have left in an ordinary clamp "place stocks," "grizzle stocks," "stocks," "picked stocks," and "red picked stocks." As these different varieties are largely determined by picking, human nature comes in, and great latitude must be allowed. The law has not yet defined all the varieties of stock bricks, and it, probably, never will. There is abundant food for litigants here.

The fact is that, given fine weather, the hand-made, slop-moulded brick which is to be burnt in a clamp will, on the whole, turn out satisfactorily enough, except for some on the outside of the pile. But, if wet weather sets in just after the clamp is set and the fires are alight, there is abundant risk of a large proportion of the bricks being distorted, and for several tiers from the top they will, as a rule, be rendered so rotten as to be worthless. Hundreds of them may be broken by simply letting them fall one by one from the hand to the ground.

This, of course, is a very great waste of carefully-prepared raw material, and affects both the profit on and the price of the better bricks in the clamp. But makers have not seen their way to improve matters until lately, and it may be that the keen competition of Peterborough makers has spurred them on to an appreciation of a more scientific treatment of the mode of manufacture. It might have done very well fifty or a hundred years ago to have made slop-moulded bricks by hand, and then to dry them in hacks, finally burning them in clamps—and this is the method commonly adopted now at Sittingbourne and district—but it is too slow, the bricks are not remarkable for their good shape, and an enormous amount of ground is required for the hacking and stocking. By the last-mentioned method, many months in the year must lay fallow, and no brickmaking can be done. It is only with difficulty that the bricks can be dried out-of-doors in the winter, and frost is a perpetual enemy to anything like continuous work all the year round. Unless a very favourable season crops up, the bricks cannot be made more than about seven months in the year.

Confining our attention to the Sittingbourne district, which is, of course, the most important centre of the stock brick manufacturing industry, we may say that it has always been held that "stocks" can only be made by hand—that machinery is incapable of turning out the genuine article. After what we have seen in the large experimental installation alluded to, however, we rather doubt this dictum, though it has the sanction of antiquity. We shall make some qualifications, nevertheless.

The experimental works, the property of Messrs. Eastwood & Co., Limited, are at the Conyer brickyard, Teynham, Sittingbourne. The raw material consists of loam mixed with "breeze" (the refuse of London dust-bins), and a small proportion of chalk. This material is placed in a pug, after having been suitably prepared, and is then delivered to a machine of American pattern. The bricks are pressed into a mould, the latter having been well sanded, and are turned out, frogged, on to the delivery table. By manual labour the prepared bricks are turned out of the moulds on to steel-framed trolleys, and are arranged in tiers on the latter, as is usual in hundreds of brickyards throughout the country. A trolley being full, it is wheeled along steel rails to the drying-shed hard by. The drier is a most important part of the process. It is arranged in three tunnels. When the raw bricks are first introduced to it, the temperature within the drier is but a little above that of the outside atmosphere at the time. By a semi-automatic process the trolleys are pushed further in the drier as new trolleys are introduced, and as they go farther in the temperature becomes higher, until when they arrive at the end of the tunnels the bricks are being dried in a temperature of 250 deg. Fahr. As this temperature is considerably above the boiling point of water, it will be seen that practically all moisture must be driven out of the raw brick. The bricks come out of the tunnel extremely hot, and, in spite of the fact that they are brought into immediate contact with cold air, do not crack. Perhaps the most remarkable thing in the process is that the

complete drying is effected in twenty-two hours. Seeing the process is so rapid, we thought it desirable to test the shrinkage. When the raw bricks go in the drier they measure 9⅞ in. by 2¾ in. by 4¾ in., and when they come out they are 9 1/16 in. by 2⅝ in. by 4½ in. The drier is of German origin, and is by Messrs. Möller & Pfeifer, of Berlin.

After leaving the drier, the bricks are raised by a lift to the kiln—the drier and the kiln being in one long building—and a similar gradual process is adopted in the burning. That is to say, the bricks on being introduced into the kiln are not suddenly thrust into a great heat, but insensibly approach the highest temperature by automatic action. They are burnt at a maximum temperature of from 1,800 deg. to 2,000 deg. Fahr., and are in the kiln sixty-eight hours. In regard to fuel, one hundredweight of nuts coal will burn 10,750 bricks, though it must be borne in mind that there is already a considerable quantity of fuel in each brick in the shape of "breeze."

The whole process is extremely simple, and appears to be very effective. After coming from the kiln the bricks have much sharper angles than have the hand-made "stock." They are of a better shape, and, having been well sanded in the mould, may be said to be sand-faced. The proportion of unsound bricks is very small as compared with the clamp-produced bricks. At the same time, the colour of many, as we saw them stacked in the yard, bearing in mind that they were intended to be "stock-coloured," did not strike us as being too much like the "clamp" stock. A very large proportion were excellent bricks in every way, and they should command a ready sale, but they looked too much finished off for "stocks"—too good, in fact. In regard to colour, we were reminded that the installation, although producing 20,000 bricks per day, was only experimental, and it is believed that, with experience, many improvements will be effected.

At any rate, it is proved that Sittingbourne "stock" bricks may be made by machinery, dried by artificial means, and burnt in closed kilns—and the experiment is, thus far, entirely successful.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held at the rooms of the Institute, Conduit-street, on Monday, the President (Mr. Aston Webb) in the chair.

A Bird's Eye View of the Minôan Palace of Knossos, Crete.

The minutes of the last ordinary meeting were taken as read,

Dr. Evans read a paper on "The Minôan Palace of Knossos, Crete." He said that, after three campaigns of excavation, begun in 1900, it was now possible to speak with some confidence of the main lines of the great prehistoric palace that it had been his lot to bring to light on the site of Knossos. The magnitude of the work could be judged from the fact that between four and five acres of the building had now been uncovered, and in some parts the area had been practically doubled, so far as architectural results were concerned, by the recovery of extensive remains of upper stories. Great assistance had been given to him through the Cretan Exploration Fund, and he gladly seized the occasion of heartily thanking the Institute for its liberal contribution; but the annual amount to be covered, over and above the assistance given, had still been necessarily large. In carrying out the work he had been specially fortunate in securing the services of Dr. Duncan Mackenzie and of Mr. Theodore Fyfe, as to the excellence of whose architectural plans and drawings the Institute would have that evening an opportunity of judging.

Reviewing the construction of the palace and its general design and distribution, Dr. Evans stated that, in outline, the palace very nearly approached a square form with an oblong central court, and apparently four main entrances, roughly answering to the points of the compass. To the west were the remains of a paved court with altar bases and raised causeways. Along the base of the palace wall was a raised plinth, which seemed also to have been used as a seat, and there was every indication that this was the principal gathering place of the people—the Agora—where king and citizens would most naturally have met. Here was the state entrance, a lofty porch flanked by fresco paintings of which bulls formed a principal feature, and giving access to two imposing entrances. One of these opened into a magnificent corridor, the other to a chamber at whose portal one might well believe the king sat in judgment before the assembled people in the Agora beyond.

The entrance corridor contained remains of a great processional fresco—men in long robes, priests or princes, youths carrying vases, apparently tribute-bearers, the lower borders of the robes of a brilliantly-apparelled lady, perhaps a Queen. Evidence was forthcoming of the continuation of this "Corridor of the Procession" along the upper terrace of the southern face of the palace. By this means a covered line of passage was secured between the state entrance on the west and the eastern quarter of the palace, passing the southern entrance, and looking out on the south end of the central court.

The more immediate objective of the entrance corridor from the west was to be found in the remains of a propylæum overlooking the southern terrace. This propylæum was originally entered by three doorways, giving access to a kind of fore-hall containing two column bases.

The same system of processional figures that characterised the walls of the entrance corridor from the west was continued on those of the columnar hall. The elegant pose of the youth bending back to support the weight of the tall painted silver vase that he bears with both hands, the brilliantly decorated belt and embroidered loin-clothing, but above all his finely-cut features, of a dark South European type not yet extinct in Crete, combine to stamp this as the finest example of figure-painting that had survived from prehistoric Greece. Two remarkable fragments show a part of a head, with a fleur-de-lis crown, and a male torso, naturalistically moulded, wearing a fleur-de-lis collar.

This southern propylæum gives access to a small court with an altar-base, beyond which, in the present state of the remains, was visible a somewhat complicated block of small rooms. Many of them seemed to have served as the offices of palace functionaries, and contained deposits of their clay archives, accounts, inventories and other documents, in a highly developed system of writing about a thousand years earlier than the first written records of historic Greece. Other small chambers were used as stores for fine stone vases, or as cellars containing vats and tall jars, once filled with oil or wine. This block of ground-floor or basement rooms flanked the west side of the central court, the floor level being four steps down from it. On its inner or western side the block was flanked by a fine paved corridor, upon which opened a succession of eighteen magazines, many of them with their rows of huge oil jars—large enough to have accommodated the forty thieves!—still ranged in order against their walls. Beneath the paved floor on which rested the jars were double tiers of stone chests, lined with lead, which may have been constructed with a view to securing treasure.

The existing remains of upper blocks show that the whole of this region was originally surmounted by a more important upper story. The distribution of these upper blocks, as well as the inner lines of the lower walls and supporting pillars in the central part of this area, show that an important hall ran down it, the general outline of which can, to a great extent, be recovered. It almost exactly corresponds in arrangement with the great Megaron of the contemporary palace excavated by the Italian Mission at Phæstos, on the southern side of Crete. The face of this hall rose opposite the propylæum, and it was approached either by a ramp or, as at Phæstos, by a flight of steps that has since disappeared—this particular portion of the site having been much denuded.

A most interesting room in this part of the Palace was the room of the throne, discovered—though at but a small depth from the surface of the ground—in a surprising state of preservation. The remains of the frescoes, wingless griffins with peacock plumes against a landscape background of somewhat Nilotic aspect, were still clinging to the wall. Gypsum benches were ranged on three sides round the well-paved floor, which still showed traces of its central square of red painted plaster. In the centre of the north wall, between two lower benches, rose the gypsum throne with its high leaf-shaped back—it was once covered with coloured designs—its shapely seat, its lower arches and crocketed moulding, so strangely anticipative of Gothic architecture. Opposite, giving light to the whole, was an impluvium, except for the inverted lines of its supporting columns, almost Pompeian in character, with steps descending to an oblong basin beneath the light well, which may have served as a shallow bath. The wooden columns were found in their sockets in a carbonised condition, but, together with the upper part of the walls and the roof, they had now, in accordance with Dr. Evans's directions, been restored by Mr. Fyfe after a wall-painting of a small shrine found in the palace, so that this little gem of Knossian architecture has been definitely rescued from destruction.

Of the importance of the great Megaron, and its magnificent decoration, the contents of the basement spaces bear ample witness. Here were found not only pieces of bull reliefs analogous to those from the northern entrance, but remains of painted human figures, both male and female, moulded in high relief in *gesso duro*, and showing in their reproduction, not only of the general contour, but of the individual muscles, sinews, and veins, an extraordinary fidelity to nature. Fragmentary as they are, they represent the highest achievement of stucco relief by the Minôan artists, and found their fitting place in the largest palace hall.

Having given a description of the "Hall of the Colonnades," one of the finest features of the building, and the staircase—flights of stairs, in one case flanked by a balustrade, leading from one story to another—a discovery, Dr. Evans considered, probably unparalleled in the history of excavation, the author next treated of what was obviously the domestic quarter. The centre of interest here was a very original chamber, called by the author the "Queen's Megaron," which was approached through double doorways by a crooked passage from the "Hall of the Double Axes."* It was divided into two parts by a stylobate, with pillars at intervals on a central ledge, leaving ample openings for light, and which showed on each side of it remains of a shapely bench of wood and plaster.

A small private staircase leads up by two flights of stone steps from the Queen's Megaron to the chambers, still partly traceable above this room, and the adjoining hall of the double axes. There are indications that this staircase was continued to a still higher story. On the west an upper and lower passage leads to a complicated series of rooms originally provided on one side with a wooden staircase, which seem to have been used as sleeping-rooms and for other domestic purposes. There is here a small court suggestively marked with the distaff sign; an inner room where valuables seem to have been stored, of which various traces, including a gold heart and parts of a crystal bowl were found, and other rooms which may have served as bedrooms, including one off which opens the nearest approach to a modern water-closet yet found in any ancient site. There is here, besides the passage to the main drain, an actual flush-pipe, and there are traces of a wooden seat.

Nothing, indeed, is more extraordinary than the remains of an elaborate drainage system existing throughout all this section. The limestone slabs of sections of the pavement, the pillar bases and door jambs, walls with painted stucco still adhering to them—in one case, even a stone bench in position—are here preserved on the upper story level. From these floors a succession of stone shafts—one apparently connected with another latrine—descend to a network of stone ducts, large enough for a man to make his way along them, beneath the floor level below. It may be added that near the olive press area were found fine terra-cotta drain-pipes fitted into each other with stop-ridges and internal collars to grip the cement, which in some respects seem to equal the most modern forms, though following out a different principle.

Very animated paintings representing scenes from the bull-ring, in some of which female toreadors took part, formed a favourite subject of the palace wall-paintings. The room above the "Queen's Megaron" seems to have been adorned with miniature designs of this class.

* One of the largest existing halls of the palace, and named from the signs repeated on its limestone blocks.

Dealing with the general design and construction of the building, Dr. Evans brought out some remarkable contrasts presented by the palace of Knossos when compared with the palaces of Tiryns and Mycenæ, showing that in the former, unlike the Mycenæan palaces, everything was arranged according to the most elaborate planning, the whole outline being laid down in definite lines without regard to the site—or, rather, a site seemed to have been chosen which allowed free scope of action to architect and engineer.

Another point dwelt on was the striking resemblance in plan between the Knossos building and the palace of Phæstos—among known buildings the only real parallel. Summing up, Dr. Evans said that it was impossible, in view of the fundamental arrangement revealed by those buildings—pointing in both cases to a more or less square building with central court crossed at right angles by two main lines of approach—not to recall the familiar features of the Roman camp, and its still more remote prototype as traced by Chierici and Pigorini in the prehistoric pile-settlement, the "Terremare" of the Po Valley. The quadrilateral form, the Orientation, the existence of *Cardo* and *Decumanus* and their parallel lines, and the inner court itself, were points of comparison of a very suggestive kind, and seemed to point to an ancient European system of arrangement, sister forms of which were preserved by prehistoric Crete as well as Italy.

The palaces of Knossos and of Phæstos belonged in their existing shape approximately to the same period. That period, as shown by the earliest remains of vases and other relics found above the floor levels in each case, was somewhat more remote than that to which Mycenæ has given a name, though in both cases modifications of the building were carried out during the Mycenæan period proper. The best positive chronological data is supplied by the lid of an Egyptian alabastron found with remains of indigenous stone vases belonging to the Early Palace period on a floor-level near the northern hall. The lid has a beautifully cut cartouche of King Khyan, of the Fifteenth Dynasty, who was the principal ruler of the foreign or Hyksos Conquerors in the Nile Valley. He seems to have reigned about the eighteenth century B.C., and, considering the rarity of his monuments in Egypt itself, it is difficult to suppose that objects with the name of this Pharaoh could have reached Crete at a later date.

The high level of civilisation reached in Minôan Knossos by the date of the foundation of the existing palace, so conspicuous alike in its architecture and decoration, points itself to long centuries of earlier development. It is not surprising, therefore to find beneath the later foundations the remains of a still earlier palace, the lines of which seem partly to have been followed in the later work. The thirteenth dynasty monuments—not later than 2100 B.C.—found beneath the pavement of the central court, seem to belong to this earlier building, and a series of exquisite painted vases of eggshell fabric, in design and colouring never certainly surpassed, point, together with other relics, to an intimate acquaintance with Twelfth Dynasty designs, going back therefore to about 2800 B.C. But beyond this, again, we have evidence of still earlier princely occupation, and fragments of imported Egyptian vases of diorite and obsidian that take us well back into the Fourth Millennium before our era. And still before this, underlying the whole hill-top on which the palace stands, is a vast Neolithic settlement replete with stone weapons and implements of primitive pottery, and idols, as were later supplied by ancient intercourse with Egypt, which carries back the antiquity of the site beyond the limits of such records.

Mr. G. A. Macmillan, in moving a hearty vote of thanks to Dr. Evans, said he could hardly believe it would be possible to listen to a paper more interesting than that given. The President reminded him in the course of a conversation he had with him that evening that the Institute concerned itself with architecture more than archæology, but all who had listened to Dr. Evans's paper that night and had seen the admirable illustrations, and the drawings by Mr. Fyfe, with which it was illuminated, would agree that the problems concerned were largely architectural, and he could not help feeling that in the material which Dr. Evans had placed before them there was a good deal left for architects as well as archæologists to do. He could not help thinking that many architects might be disposed to try their hand at reconstructing some parts of, or perhaps the whole of, the palace, and it was perhaps not vain to imagine that if architects of the present day were called upon to build a palace for a South African or some other millionaire, some hints might be taken from this magnificent building which had been outlined to them that night. Before he sat down he might be allowed, as one who had been largely concerned in the Cretan Exploration Fund, by whose aid Dr. Evans had carried out his work, to remind them that there was yet another season's work before them, and that the exchequer at the present moment was empty.

Mr. R. Phené Spiers, in seconding the motion, said that he had the pleasure of listening to Dr. Evans last year, when he read a paper on the first portion of his exploration before the Architectural Association. What struck him most that night, was that the art was like that of the Egyptians—the further back they went, the purer and finer seemed the examples. It was well known that in the earlier Egyptian tombs the sculptures were of a far finer character than those in the later; and that night they had seen representations of paintings and sculpture which were certainly finer than any except those in the great Greek buildings. The same tendency was observed in the decoration. There was another point he would like to refer to. He thought that if the plan of this Palace of Knossos had been thrown on the screen without any intimation whatever as to where it came from or what its date was, one might fairly have guessed that it was another of those buildings of Rome, and it might well pass for a palace belonging to the Cæsars. That became all the more noticeable when the way it was set out was noticed, with the line of axis north, south, east, and west. The regularity of the planning was altogether different from what one would imagine the earlier buildings to be. There was another point on which he would like a little more information, and it was a matter which Dr. Evans mentioned casually in the commencement of his paper. In the photographs the walls, with one exception, were shown with level surfaces all the way through. In one of the first photographs, however, it would have been noticed that there was some material on the top of the stone wall. Dr. Evans said that the upper portions of the palace were built with rubble clay, and that the outer surface of this was covered with some kind of plaster of gypsum. Of late, of course, there had been a good many discoveries in Egypt and elsewhere, and the walls were found to have been built of clay. What he would like to ask was whether the fact of the upper portion of the upper stories of this building having been built in clay, these walls had fallen down into the lower portions of the Palace, and so, to a certain extent, preserved the frescoes which had been found, and which had been shown that evening.

Dr. Evans said it was quite true that a great deal of rubble and clay of the upper stories got into the premises below and preserved the frescoes. He might say that the President and Council of the Royal Academy had kindly consented to allow an exhibition of the drawings and plans and photographs, &c., as part of the winter exhibition of the Academy, so that those interested would have the opportunity of looking at the details at their leisure.

A number of photographs of drawings of fragments found in the palace were shown on the screen, and briefly explained by Mr. Fyfe.

Mr. D. G. Hogarth said he did not think there was much he need add to what had been stated. Of course, Dr. Evans had not told one tithe of what had been found in the Palace. He had said nothing about his inscriptions, his clay tablets, his crystals, or anything about his jewels; but he gathered that the object of the meeting was to keep more or less strictly to architectural details, and therefore he would only say with regard to the question raised about the rubble of which the upper part of the walls of Knossos was made, that one would rather have expected mud bricks. It was a fact that on three of the sites, more or less of the same period, in Eastern Crete, there were remains of mud bricks of a very fine kind, well made and durable, and these bricks were so well preserved that it was inconceivable that some of them should not have been found had they were used in the Palace of Knossos. Therefore one was forced to the conclusion that the upper part of the walls were formed of far worse material than the smaller houses on sites of very much less importance. In that respect it somewhat recalled Egyptian work, where they not infrequently found a wall beautifully decorated which in its own composition was entirely unworthy of such decoration. Of course, buildings in Egypt had a durability which could not be expected in other countries, and which could hardly have been expected in Crete. In fact, the preservation of this building in Knossos, for many reasons, was about the most miraculous fact in connexion with it. Dr. Evans had not had time to tell them that this building was lying with some of its frescoed walls hardly more than an inch or two below the ground. The plough had passed over it and the people had dug over it, and yet the thing remained. He could not say that he had been able to form any reason which would account for its preservation, except that Crete had always been a land of revolution, where man had too much to do in killing his brother man to interfere to any great extent with the remains of greater ages which had preceded him. The bricks found in the East of Crete were remarkable, if only for their great size. He was not acquainted with bricks in Egyptian buildings so great. They were 2 ft. square, but not more than 4 in. thick—more like thick tiles. The only other thing he would mention was the remarkable fact that the palace was not fortified, and not only was that the case with the palace, but also with the town. It was not singular in that. As far as he knew, the other sites were singularly devoid of fortification. If they considered what was the state of things in the countries surrounding Crete, not only in that age, but in all subsequent ages, it spoke of a very remarkable period in history, of which adequate explanation was not given, that there could be a whole land dotted over with large unfortified towns—that was to say, of towns which had no reason to protect themselves against each other, and apparently no reason to protect themselves against the outer world. It would seem to show that those words of "empire and dominion of the seas" even here were not out of place. That was to say, it was impossible to conceive that had Crete only had reference to itself and to a comparatively small Power, the Kings with their great wealth would have lived in an unfortified place. Not only that, but they had these painted things to show there must have been gold and silver vessels which must have rivalled those found at Mycenæ. Those beautiful vases were modelled in clay in a most remarkable way, which spoke of the existence of a very large number of beautiful vessels in precious metals, such as gold and silver, and that was, of course, the great thing they hoped to find. They hoped some day to find gold and silver metals which gave such beautiful examples to the potter's art in Crete. That would not happen until they found the Royal tombs in a better state of preservation than anything yet found.

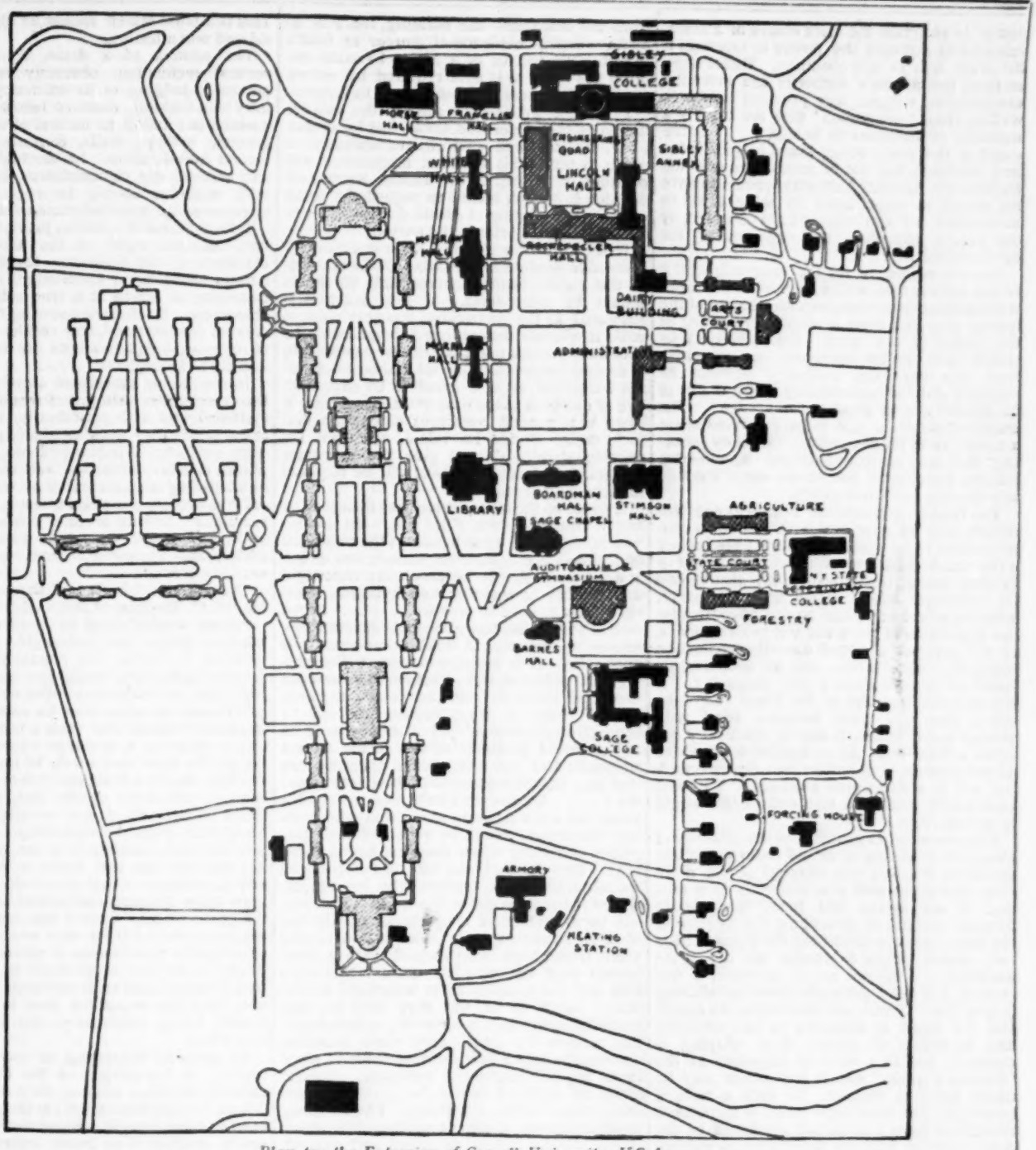
The Chairman said his remark to Mr. Macmillan as to the object of the meeting was rather with a view to explaining that the financial support of the Institute was not greater than it was. For himself, he could only say that he had been so intensely interested that he would certainly become a subscriber to the Society, and he hoped that many others who were there would do the same, for he understood there was a considerable deficit each year, which had to be borne by those who certainly ought not to bear it, for they also had to carry out the work. He now asked them to pass a hearty vote of thanks to Dr. Evans and Mr. Fyfe.

The motion having been carried,

Dr. Evans expressed his thanks for the reception he had received, and said he was very greatly indebted to Mr. Fyfe for his successful work on the site of Knossos.

The Chairman announced that the next meeting, which was for the election of members, would be held on January 3.

SUNDAY SCHOOL, NEW HARTLEY, SEATON DELAVAL.—The foundation-stone has just been laid of a Sunday school for the New Methodist Connexion Chapel, New Hartley, Seaton Delaval. The schoolroom has been designed by Mr. Walter A. Ingledew, Tynemouth.



Plan for the Extension of Cornell University, U.S.A.

ENLARGEMENT OF CORNELL UNIVERSITY, U.S.A.

THE accompanying block plan (reproduced from a plan published in the *New York Tribune*) shows the immense scheme for the enlargement of Cornell University as proposed by the architects, Messrs. Carrere & Hastings, and accepted by the Trustees.

The existing buildings are shown in black, the proposed new ones in cross hatching. The plan unfortunately has no scale, but it will be sufficiently obvious that the scheme is a very grandiose one, and ought to be a great opportunity both for the University and the architects.

THE SANITARY INSTITUTE:

DRAIN TESTING.

THE first meeting of the winter session of the Sanitary Institute was held on the 10th inst., at the Parkes Museum, Margaret-street, W., when papers were read and a discussion took place on "Drain Testing." The chair was taken by Professor W. H. Corfield.

Dr. Louis C. Parkes read the first paper, which, with one or two omissions, was as follows:—

"There appears to be no express statutory sanction for the testing of drains by the officers of Sanitary Authorities. Section 40 of the Public Health Act, 1875, requires every Local Authority to provide that all drains within their district be constructed and kept so as not to be a nuisance or injurious to health. This section may in some sense be presumed to indirectly authorise and sanction the testing of drains, as it is difficult to see—drains being underground and out of sight—how the Local Authority can perform its duty under the section unless its officers ascertain by some test that the drains in the district are constructed and kept so as not to be a nuisance or injurious to health. Indirectly, then, but not expressly, there appears to be statutory sanction for the testing of any drain in a district, even if it is not actually a nuisance or injurious to health, to ascertain if it is constructed and kept so as not to be a nuisance.

In the case of drains which are a nuisance or injurious to health, there is the power to open the ground and examine the drain, which is conferred by Section 41 of the Act of 1875, upon the written application of any person to the Local Authority, stating that the drain is a nuisance or injurious to health (but not otherwise). Any person, in this case, would undoubtedly include the Sanitary Inspector, who, after reporting to his Local Authority that the drain is a nuisance, may proceed, after twenty-four hours' written notice, to the occupier of the premises, or in case of emergency without notice, to enter the premises, open the ground, and examine the drain. . . . According to the words of the section (41), in the event of the drain on examination appearing to be in bad condition, or to require alteration or amendment, the Local Authority shall forthwith serve notice on the owner or occupier for the execution of the necessary works. . . . No doubt the section gives power to the Local Authority to expose the entire length of the drain for the purpose of its examination. But the words of the section certainly do not exclude the more usual method of exposing a portion only of the drain, with a view to the application of some test from the exposed portion. It is evident also that the section contemplates the doing of some damage in the course of the examination (it may be by removing a pipe or breaking into the drain), as, in the event of the drain being found to be in proper condition, any damage done is to be made good at the expense of the Local Authority.

In the Metropolis, under Sections 40 and 41 of the Public Health (London) Act, 1891, a similar power is given with respect to the examination and testing of drains as in Section 41 of the Act of 1875. It is true that the word drain is not especially mentioned in Sections 40 and 41, but the words actually mentioned—namely, 'water closet, trap, siphon, pipe, or other works or apparatus connected therewith'—are, no doubt, of sufficiently wide meaning to include drains. Moreover, Section 40 gives power to open the ground to ascertain the course of the drain; and it is unreasonable to suppose that the Legislature, whilst giving such

power to ascertain the mere course of a drain, intended to withhold the power to ascertain if the drain was in bad condition. Under these sections the Sanitary Authority can make the examination, without any previous notice in writing from 'any person' that the drain is a nuisance or injurious to health. . . . . In the event of the drain being found in good order and condition, but not in accordance with the by-laws, the Sanitary Authority appears to have no power to insist upon its being made in accordance, but can merely have refunded, by the person offending, the expenses of the examination. . . .

Upon a review of all the circumstances, it would appear that whilst in the public health statutes there is no express authorisation of the testing of drains, there is absolutely nothing in the shape of any veto. Inferentially tests would seem to be sanctioned, as otherwise how can the local authority perform its statutory duty of ascertaining if the drains of its district are in good order or not? The nature of the drain test to be employed offers a fruitful field for discussion. Broadly speaking, the test employed should demonstrate defects, if they exist, and should not of itself do any damage in its application.

The Water or Hydraulic Test.—No one will dispute that all new drains should be so constructed as to be watertight, when tested under a reasonable pressure. With regard to old or existing drains, theoretically, they also should be watertight when tested under pressure. The argument advanced by the advocates for the application of the water test to all drains is, in my opinion, a sound one—the contention being that house drains are not uncommonly liable to become choked and obstructed. If the obstruction occurs at the lower end of the drain, then the latter becomes filled with sewage under pressure, and is practically put under a water test. An obstructed drain which allows sewage to percolate into the surrounding soil is a dangerous nuisance. To avoid such occurrences, it is said, every drain ought to be watertight.

Unfortunately, in practice, in the majority of cases, the rendering of an old drain watertight generally involves the relaying of the drain with new pipes and new materials in a new bed. I am aware that there is a certain patented method of cementing the interior of old drains without disturbing the pipes in their bed, which claims to render an old drain watertight. I do not know, however, if this method has been generally found satisfactory in practice. Where serious defects are found, and the drain is evidently in bad condition and incapable of repair, then relaying is essential, and this may be regarded as the 'necessary works' which the owner may be called upon to execute. In such a case, if taken into Court, the legal point is sometimes raised that there is no power conferred in the Acts enabling Sanitary Authorities to enforce the substitution of a new system of drainage for an old one, the new system being the modern one provided for in drainage by-laws of inspection-chambers, interception from the sewer, and the provision of means of ventilation. In my experience, although the magistrates are inclined to uphold this contention, they are usually to be convinced of the necessity for ventilation and interception from the sewer, even if they are not prepared to enforce inspection-chambers. I do not know of any authoritative decision upon the point as to whether, when a drain is relaid under notice from a Sanitary Authority, it must conform with the drainage by-laws or regulations of the Authority. . . .

The chief difficulty that arises in connexion with existing drains is experienced where a drain, although not watertight under pressure, is working well, and is not obviously a nuisance at the time of inspection or examination. Such a drain may be incapable of repair so as to be watertight. There may be no evidence of nuisance in connexion with it, and no evidence of danger to health, beyond the fact that it is not watertight. It is doubtful, if under these circumstances, a notice to relay the drain is not somewhat exceeding the powers conferred by any Public Health Act; and this is the view which Petty Sessional Courts are apt to adopt. Theoretically, no doubt, the drain should be watertight, as even although there may be no evidence of leakage when running freely, at some future time the drain may become choked, and then leakage may occur. Where such a drain passes under an inhabited building, and, on testing, it is found that gas escapes from the drain into the building, there is no doubt sufficient evidence of danger to health to justify the service of a notice to make the drain gas-tight, as is now required by statute for all drains under cellar-dwellings in London.

I do not propose to discuss the relative merits of the water and smoke test for drains. . . . . Unless some authoritative statement is made to settle this question, magistrates will possibly in future, if the recent Southwark decision is quoted, incline to regard the result of the water-testing of an old drain as no evidence of defects prior to the testing.

It seems to me that the main question for discussion to-night is as to whether the interests of the public health demand that all drains should be water-tight. If this question is answered in the affirmative, the next point to settle is whether the existing statutes confer the necessary powers to enable sanitary authorities to compel owners to relay all drains which are not watertight, even if found to be unproductive of nuisance at the time of examination. If there is a general consensus of opinion that such drains should be relaid, and that the existing statutes do not give the necessary powers, then fresh legislation will be required to meet the demand."

A paper on the same subject was then read by Mr. J. Osborne Smith, F.R.I.B.A. He said:—"In dealing with new buildings the treatment of drainage is comparatively simple and direct, and the work should be absolutely watertight and capable of resisting any hydraulic pressure likely to arise in practice. . . . . In the case of old drains, however, their examination, testing, and adaptation, trouble and anxiety at once arise. It is sometimes said, 'Why preserve old drains at all? Remove them and put new ones whenever you alter or add to an old house.' This is what theologians call 'a counsel of perfection,' and if money were no object would probably be the course always adopted. But can one always definitely say that this drastic treatment is absolutely essential? . . . . Drains more than, say, twenty-five years old, even those in connexion with well-built structures, should be regarded with suspicion, especially when they are inside buildings. Also those of any date in the ordinary speculative houses, particularly in districts where the supervision of the Local Authorities has been inadequate or perfunctory. Drains of more recent date, say, from ten to twenty years, which have been formed upon a good system may be regarded more favourably; they will not probably be as watertight as new drains ought to be, but they may be, and probably many still are, serving satisfactorily the purpose for which they were intended, and require only a few improvements to place them beyond reasonable reproach. Special attention must, of course, be given to such drains when within a building. I know many buildings having drainage of this class which is periodically tested, examined and cleaned, and is for all practical purposes as efficient now as when first formed. Such drains, if under a building, should stand the severest test which can reasonably be applied to them. For those of this class which are outside the building, smoke under pressure, or a chemical test, are usually sufficient to discover defects which are important enough to need attention. The application of hydraulic pressure to old stoneware drains tends to further weaken any defective points.

When a drain becomes blocked by fat, house flannels, or other obstructions, and the sewage is held back for several days, a condition is set up which seriously increases the risk of injury to health. It will probably be agreed, however, that stoppages in well-constructed drains are not of frequent occurrence, and the risk of harm arising from slight leaks is therefore comparatively small; so small, I imagine, that the most enthusiastic or timid sanitarian would not for a moment think it necessary to incur the expense of opening up and uncovering drains to trace every slight leak which a severe water test might reveal in the drains of his own house. He would rather exercise a wise discretion, and only act when a reasonable test and examination indicated real and urgent need. . . .

The *size* of drains, as we know, seriously affects the character of drainage. Small bore pipes are now in favour, but that their indiscriminate use produces nuisances will probably be admitted by all who are practically acquainted with them. Small pipes often mean cleaner drains, but also, on the other hand, greater risk of siphonage of traps. This is a point which should be specially considered when testing.

The *position* of a drain, apart from its vertical inclination, obviously is most important in judging of its efficiency; its proximity to a building, distance below the surface, position in relation to natural strata, made-up ground, springs, wells, &c., should receive careful consideration. In short, all conditions and surrounding circumstances in connexion with drainage should be regarded from a common-sense practical standpoint. . . .

I do not think it possible, justly, to apply any hard and fast rules to the testing of the efficiency of old drainage. Careful discrimination, based upon knowledge, is absolutely necessary to arrive at a true estimate of its character. Haphazard guessing from meagre data on the one hand, and reckless application of rigorous, destructive tests on the other, are equally to be deplored. . . . .

In conclusion, experience clearly shows that the examination, testing, and cleaning of drains, systematically and periodically, are essential to the satisfactory working of any system, however perfect. Windows, floors, flues, fireplaces, cisterns, lavatories, and other portions of a building are, as a matter of course, periodically examined, cleaned, repaired, and defects remedied. Just as necessary is it that every system of drains should in like manner be maintained accessible, clean, and in good working order."

The following is part of the paper read by Mr. W. C. Tyndale, M.Inst.C.E.:—

"Some method must be adopted of proving whether drains are watertight or not; the methods of testing are practically only two, namely, that of the smoke test and the water test; but the water test is the only one to my mind which is satisfactory for new work. It is frequently argued that such a test is an unfair one to place on a drainage system, but those taking this view must surely be forgetful of the fact that should a drainage system stop up, the sewage will apply exactly such a test. If it could be guaranteed that no stoppage would occur there might be something in the contention, but unfortunately it is the experience of any one who has had much to do with sanitary investigations that drains do stop up, and very often become surcharged almost up to the ground level. Such a test, moreover, constitutes no hardship for new work, as the constructor of a new system is aware of the conditions under which his work is to be done, that it has to stand such and such tests, and he will take the necessary care to insure the results being satisfactory, and this is done every day.

So much for the testing of new work. But turning to the subject of the testing of an existing drainage system, very different conditions present themselves; in fact, the question in this case is fraught with so many difficulties and is capable of so much argument, that it would almost seem impossible to do it justice in the short space of time available. . . .

The great difficulty lies in arriving at what is right and proper from the health point of view, and at the same time shall not be unfair in other directions. To put the matter in a more concrete form, we have the tenant of a house, his doctor, his expert—be he engineer or architect—and the Local Authority, all deeply interested in the soundness of a drainage system, while on the other hand we have the landlord or his agent, or both, who, while not wishing anybody's health to suffer, are keenly interested in avoiding unnecessary expenditure.

The system of drains in question may be comparatively new or of many years' standing; it may have served its purpose admirably for draining away sewage from a house, and in all probability the landlord believes or hopes that the system is free from objection. Doubts are cast upon it. Perhaps illness occurs, which induces the doctor at any rate to suspect defective drainage. A testing of the drains is suggested. The question is asked on behalf of the landlord what tests are proposed to be made, and he is generally informed that it is proposed to fill the drains with water. The landlord objects—saying that it is unfair, and likely to make the system which hitherto has been, so far as anybody can tell, sufficiently sound, leaky; the true condition, of course, cannot be ascertained without a testing, and it becomes a question whether the smoke test in this case should not suffice, and whether the application of the water test would not produce defects which do not exist, or aggravate

such as do exist so as to render them harmful.

These are the points round which so much discussion lately, both inside the law courts and out, has centred; and while I can say that I have had nearly thirty years' experience with this matter constantly before me, I must admit that I am unable to suggest any hard and fast rule which should be adopted.

It is undoubtedly hard on any tenant that he should be unable to have it proved to him conclusively that he is not subject to any malign influence from drains; but, on the other hand, it is simply monstrous to suggest that any one, possibly without real skill in these matters, should be at liberty to apply every conceivable test to a drainage system which, although unlikely, possibly is sound. For my own part, I think that when dealing with an existing drainage system of some or many years' standing tests should be applied gradually—that is to say, a beginning should be made with the smoke test, and afterwards the water test in sections and without undue pressure should be applied. Such a procedure, while putting no undue strain on a system should yet give quite sufficient indication of the state of affairs, and would enable any open-minded expert to form a very good opinion of the necessities of the case and what really was desirable to be done. When forming an estimate from a test of this sort the conditions of the situation of the drains, and the soil in which they are laid, should be taken into account, as these must necessarily be large factors in deciding the desirability or otherwise of renewing or repairing the system of drainage. . . . .

It would save much trouble and hardship also if Local Authorities would observe a little latitude in particular cases, and accept the opinion of an expert of repute instead of always standing out for absolute water-tightness. Perhaps what I have just said may be construed as an inclination on my part to depart from advocating the necessity for absolute tightness in new drains, but this is not so in the least. The longer my experience in the matter the more I see the necessity for absolute soundness and permanent soundness in drains. To me it is aggravating to hear the age of a drain given as a possible reason for its unsoundness, as I always look upon it as a kind of reflection on one's profession in that we have not hitherto made drains which shall be permanently watertight. If a drainage system can be, and should be, watertight at first, why should it not be watertight for a month, and if for a month, why not for a year, and for any number of years? and if it is not so, surely it comes to this, that we have been hitherto using the wrong materials. I have for some long time been of opinion that stoneware drains are not sufficiently reliable for drains under or near a house. It is common experience that no matter how carefully drains have been laid and tested they develop leakage. To what these leakages are due no one can say in all cases; doubtless, one reason which has not been sufficiently recognised is expansion and contraction due to varying temperatures of the liquid poured into them. This being so, it is my practice, wherever I can manage it, to lay all detailed drainage around a building in iron pipes. That this is not considered a very drastic measure is evidenced by the fact that many builders adopt the practice, and I find that even the builders of cheap houses in the district where I live are doing the same. I must say that, although I resent the tyranny of many by-laws, I should not be sorry to see it made obligatory by Local Authorities to lay all house drains with iron pipes. This, to my mind, is the only way in which healthy conditions of drains may be insured, and all the difficulties which we are met to consider may be avoided."

The Chairman briefly proposed a vote of thanks to the readers of the papers, which was seconded by Major Firth, and agreed to.

Mr. C. Payne (Liverpool) submitted that the testing of drains was absolutely necessary in order to insure that the materials used for the workmanship was sound, but as regards the extent of the testing that should undoubtedly have relation to the service required, the materials used, and the strength of the materials. He agreed that iron pipes were the right thing, but thought they were out of the question in the country. The smoke test, he considered, was unsuitable for stoneware drains, and very often the Local Authorities, by making inefficient tests, benefited the pay-master at the expense of the dwelling. He could not see why any distinction should be made between old and new drains, if tests were necessary at all. While they were told that sewer gas was injurious to health it was illogical to suggest that all drains should not be made perfect. The engineer's duty was simply to state the facts and the risks, and it was then for the employer to decide what to do.

Mr. Max Clarke said the subject naturally divided itself into two absolutely distinct heads—viz., what they should require for new drains, and what they were supposed to put up with from old drains. On the latter point there was a great divergence of opinion, and it depended greatly on what the drains were supposed to do when put down. In London there were thousands of houses which had been drained within the last ten years which were supposed at the time they were laid to be perfect. Owing to the negligence of those who put them down, they were not perfect, and it was the duty of every expert who dealt with those particular drains to apply the water test without any qualification whatever. In a case he knew of a house in the country he hesitated as to whether the water test should be applied, and he must say he had expected to have heard from the readers of the papers a definite view as to the class of old drains which should be permitted to pass.

Dr. McCloud thought a matter which should be considered was when the drain should be tested, especially in new houses. Houses were constantly being built on made soil, and there was danger of subsidence, and it was necessary that a test should be applied a year or two after the house was erected. Where railway cuttings were built it often caused the drainage of the neighbouring houses to go wrong.

Mr. Chambers failed to see the difference between the testing of old drains and new drains, as perfection was required in both; the only distinction he would make was between rain-water drainage and sewage drainage, and certainly he would allow no leakage in the case of the latter. He contended that the smoke test for underground drains was simply a waste of time. He would adopt the water test for all drains below the surface, and the air test for drains above.

Mr. I. Young (Battersea) believed that it was necessary for new drains to be watertight; it was equally necessary for old drains to be watertight. He trusted there would be an authoritative pronouncement on that matter that night, so that sanitary officers might know what course to pursue.

A member asked Mr. Osborne Smith to define what a speculative-built house was.

Mr. Pettit said he had always heard it given out at the Institute that a drain should be watertight, and when he passed his examination he answered that question in that way. He would like Dr. Parkes to say whether a defective drain was a nuisance or not.

The Chairman said the drains ought to be tested three times before the builders left them, and if that was done in ninety-nine cases out of a hundred they would be found watertight on all three occasions. He believed that the smoke test was good for ascertaining whether a drain was unsound, but it was no good for telling them whether it was sound. As to the statement that the water test damaged drains, he believed it was a pure bogey, except where the joints were clay, and it was a good thing if they were damaged and pulled up. He preferred stoneware to iron drains, as they were cleaner, although he was sorry to say they did become leaky.

Dr. Parkes, in reply, said he had not said that drains not watertight should be passed, but he said that the existing Acts did not enable the Sanitary Authorities to compel all drains to be watertight. If the Institute did not feel that was satisfactory it was for them to go to Parliament with a Bill to compel all drains to be watertight.

Mr. J. Osborne Smith said he was a practical man, building houses and laying drains on all sorts of soils every month, and they might leave drains perfectly safely after the three tests, and yet those drains might not stand the water test at any time it might be applied. It was his firm belief that drains, if properly put down, did not need to be constantly tested with the severe water test. If the test was applied it would probably force a slight leak.

Mr. W. C. Tyndale also replied, and said he had spoken with no uncertain voice as to what should be applied to new drainage, but in that case no hardship was entailed. In the case of old drainage other interests were concerned, and they must try and look at it from more than one point of view, and give a certain consideration to the owners that they should not be put to unnecessary expense. It did not follow that because a drain was defective it was a nuisance, and in such cases as that they had to rely on the medical men.

Mr. I. Young moved: "That this meeting of the Sanitary Institute is of opinion that all systems of drainage for conveying sewage should be capable of resisting a pressure of at least 2 ft. head of water."

Mr. Payne seconded the motion, and it was agreed to.

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS.—At a meeting of this Society held on the 11th inst., Mr. Alfred Darbyshire presiding, Mr. P. S. Worthington delivered an address, illustrated with lantern slides, on "Homes of the Monks during the Middle Ages." Mr. Worthington explained in detail the interesting features of the monastic buildings illustrated, both foreign and English, including Fountains and Furness Abbeys.—The annual dinner of the Society was held at the Queen's Hotel on the 12th inst. The President, Mr. Alfred Darbyshire, occupied the chair, and amongst others present were the Vice-President of the Royal Institute of British Architects, Mr. John Slater; Sir James Hoy, Mr. Edward Salomons, Mr. John Woolfall (President of the Liverpool Architectural Society), Mr. W. A. Royle, Mr. F. H. Oldham, Mr. John Ely, Mr. J. B. Gass, and Mr. J. W. Beaumont. The Chairman proposed the toast of "The Royal Institute of British Architects." Mr. John Slater replied. He said that while in recent years not so much had been heard of the vexed question of the compulsory registration of architects, many members of the profession, especially in the provinces, thought that a compulsory registration would be found a panacea for most of the evils from which architects and architecture were suffering. If registration were to come and be a success it could only be through the ranks of the Royal Institute. He was not altogether without hope that in the not far distant future some practical means of bringing that about would be found. With regard to the work and influence of the Institute, both had increased during the last year or two, and no one who had not sat at the Council of the Institute for some years could have the least idea of the enormous number of professional questions referred to that body. They had been consulted more than once lately by the Government and by public bodies with reference to matters of great public interest, and he was glad that that sort of spirit appeared to be gaining ground. The more municipalities and those who had to do with the architecture of buildings sought the advice of the local societies, the better it would be both for architecture and for the public. Architecture was a profession—or a business, if one preferred to call it so—but it was also one of the fine arts. Indeed, it was the mother of all the arts, because painting and sculpture, and what not, had only achieved their greatest successes when they enhanced the most brilliant pieces of architecture. Treating architecture as an art, no one could possibly exaggerate the influence on the younger generation when they were brought into contact with art and artistic matters at an early stage. Manchester had some most admirable Board schools, well built and well equipped in every way; but with regard to their interiors, the classrooms were not quite as beautiful as they might be, and it would be a good thing if the students at the Art School were encouraged to do something towards the beautification of the Board schools. This would be splendid practice for the art students, and the educational effect on the children of the Board schools would be really great.—Mr. Edward Salomons gave the toast, "The Victoria University and Owens College," to which Mr. Alfred Hopkinson was to have responded; but Mr. Salomons read a letter from Mr. Hopkinson explaining that, in consequence of the death of his friend and colleague, Professor Withers, he could not take the part in the proceedings that had been assigned to him. Mr. Salomons said that it had been expected that Mr. Hopkinson would have made some announcement in regard to the proposed appointment of a professor of architecture at Owens College. There had been a wish on the part of the

College, and this had been cordially met by the Society, to appoint such a professor, and after many meetings of the Committee appointed by the College and the Society and the School of Technology, the scheme had at last been accomplished, and it had been agreed that a professor should be appointed to fill a chair at the Owens College and to be the teacher of architecture at the School of Technology. The appointment had not yet been made, but certain steps had already been taken towards making it. Mr. J. W. Beaumont proposed "Technical Education," and Sir James Hoy responded. Speaking of the prospective arrangement for filling a chair of architecture at Owens College, he said it was intended that this should be a joint professorship. The professor was to be partly paid by the College and partly by the School of Technology. The initiatory steps were progressing satisfactorily, and there was good reason to suppose that within the next twelve months such arrangements would be made as would place what one hoped would then be the University of Manchester in the same position in regard to the profession of architecture as was at present occupied by the University College of Liverpool. Colonel Eaton proposed "Allied Societies," and Mr. John Woolfall, of Liverpool, responded. Mr. J. B. Goss proposed "The City Architect," and Mr. H. Price replied. Mr. William Goldthorpe gave "The Manchester Society of Architects," and the President replied.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The usual monthly meeting of the Sheffield Society of Architects and Surveyors was held on the 11th inst. in the lecture hall of the Literary and Philosophical Society, Leopold-street, Mr. T. Winder presiding. Mr. J. P. Hunter was elected an associate, and Messrs. H. G. Warlow and A. W. Kenyon students of the Society. Mr. Edward Holmes then gave a lecture on "The Law and Practice with regard to Local Taxation," in the course of which he showed the relative increases in expenditure and in ratable value from 1871 to 1899, it being stated that the ratable value of land has decreased from 39,838,088*l.* to 31,312,342*l.*, whilst during the same period that of buildings has increased from 55,157,300*l.* to 116,435,938*l.*, or about 110 per cent.; that of railways from 4,871,048*l.* to 15,598,001*l.*, or about 220 per cent.; and that of other properties from 5,006,898*l.* to 12,276,477*l.*, or about 150 per cent. These figures work out to a total increase in the ratable value of the country of about 67 per cent., *i.e.*, from 104,870,334*l.* to 175,622,758*l.* During the same period the expenditure out of locally-raised funds has increased from 17,646,720*l.* in 1871 to 39,934,764*l.*, or about 125 per cent., so that expenditure is increasing at a far greater rate than ratable value. On the motion of Mr. R. W. Fowler, seconded by Mr. Horace Wilson, and supported by Messrs. W. C. Fenton, J. Smith, and H. W. Lockwood, a hearty vote of thanks was accorded to Mr. Holmes for his lecture, and further discussion was deferred to a future meeting.

LIVERPOOL ARCHITECTURAL SOCIETY.—A meeting of this Society, of which Mr. P. C. Thicknesse is the Chairman, was held on the 15th inst. in the Law Library, 41, Castle-street, when a paper was read by Mr. David Beveridge on "Sir John Vanbrugh and his Work." With the aid of photographic slides shown on the lantern screen, Mr. Beveridge gave an interesting description of Vanbrugh's work in architectural design as it remained from his time in the reign of Queen Anne, the prevailing characteristic of his style being stateliness. This was notably shown in the architecture of Blenheim Palace, the chief residence of the present Duke of Marlborough, which was built in commemoration of the national victory of that period.

ULSTER SOCIETY OF ARCHITECTS.—The annual meeting of the Ulster Society of Architects was held on the 10th inst. in Ye Olde Castle Restaurant, Sir Thomas Drew, R.H.A., President, in the chair. The Honorary Secretary read the annual report, which contained the following:—When the last annual Report (which was also the first) was presented, your Council was engaged in a struggle with the Belfast Corporation to obtain the suitable modification or withdrawal of the objectionable clauses in reference to the elevations of buildings contained in the Bill then being promoted in Parliament. Deputations from the Society waited on the Law and Improvement Committees and also attended meetings of the Council for this purpose, but without avail. A petition to Parliament was agreed upon and duly presented, resulting in the rejection of the clauses, and thus a serious infringement of the rights of private property and certain disaster to architectural design in Belfast were happily averted by the action of the Society. The interests of the architectural student and the welfare of art instruction generally have been watched over by your representatives on the Consultative Committee of the Municipal Technical Institute as far as the limited scope of the powers delegated by the Technical Instruction Committee permits. The claims of Belfast to improved facilities for architectural education was laid before the Irish University Commission by your vice-president in evidence approved of by your Council. It is to be hoped that sooner or later such improved facilities may be provided. A Design and Sketching Club has been established under the supervision of your Council, but managed by a secretary and committee appointed by the members themselves. In co-operation with the Belfast Chamber of Commerce, the question of the re-issue of the ordnance maps of Belfast on a reduced scale in substitution for the present 5-ft. scale is still under consideration with the object of having the re-issue on the present useful scale. There has been a substantial increase to the membership during the year, the present total being fifty-seven, while several important nominations have been sent in and await election.—The Report was adopted on the motion of Mr. H. Seaver, seconded by Mr. V. Craig. The following office bearers were elected for the ensuing year:—President, Sir Thomas Drew; Vice-President, Mr. W. J. Gilliland; hon. Secretary, Mr. N. Fitzsimons; hon. Assistant Secretary, Mr. W. B. Fennell; hon. Treasurer, Mr. H. Seaver; Members of Council, Messrs. W. J. Fennell, F. H. Tulloch, and J. J. McDonnell, J.P.; Associate Members of Council, Messrs. T. Houston and W. C. Maxwell; hon. Auditors, Messrs. J. St. J. Phillips and Vincent Craig.—The annual dinner was held on the same date in Ye Olde Castle Restaurant, Belfast, Sir Thomas Drew presiding. The Chairman proposed the toast of "Our Guests," and Sir Otto Jaffe, Sir William Whitla, Mr. A. E. Murray, and Mr. F. Batchelor replied. Sir Otto Jaffe, in submitting the toast of "The Ulster Society of Architects," said that combination had been found useful in commercial matters, and he believed it must also be of great benefit to their profession. They had not been successful in prevailing upon the Government to adopt their views regarding the scale of the Ordnance map for Belfast, but by showing a united front they might look forward with confidence to better results in the future.—The Chairman, responding to the toast, thanked the Society for having elected him President for the second year. The architects had had the audacity to attack the Corporation of Belfast and the Town Clerk, and it turned out that they were better lawyers than the lawyers of the Corporation. In their first effort at co-operation they had been successful, and had done a great deal to modify the conditions of competitions which had always been a burning question with local architects. In connexion with the annual exhibitions of architectural work at the Royal Hibernian Academy, he suggested that these works should be subsequently transferred to Belfast for public exhibition.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir J. McDougall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend Shoreditch Borough Council 5,200*l.* for erection of working-class dwellings; Bermondsey Borough Council 7,295*l.* for underground sanitary conveniences; and Battersea Borough Council 9,285*l.* for erection of baths and wash-houses.

Board School Rehousing, Poplar.—The Housing of the Working-classes Committee reported as follows:—

"On March 25, 1902, the Council voted a sum of 56,151*l.* for the erection of dwellings on the Preston's-road and Norfolk-street sites, Poplar, for the accommodation of 1,030 persons of the working classes displaced by the School Board for London. On July 16, 1902, the Council accepted the tender of Messrs. F. and T. Thorne for the erection on the Preston's-road site of six blocks of dwellings. By this tender the contractors undertook to build the first two blocks for a sum of 14,950*l.* and to build the remaining four blocks at a reduction of 3½ per cent. on the prices named in the tender for the first two blocks. On this basis the cost of the six blocks would amount to 49,676*l.*, or a saving of about 850*l.* on the architect's estimate. The Council will remember that the dwellings to be built on the Preston's-road site will be situated on either side of, and in close proximity to, the Blackwall Tunnel. Since the acceptance of the tender we have been advised that the nearness of four of the blocks to the tunnel is such as to make it advisable that the character of their foundations should be changed so as to reduce as far as possible the lateral pressure on the tunnel. As at first designed, these foundations consisted of piers, upon which the dwellings would be carried by means of arches. Acting with the advice of the Council's Engineer and Architect, we now propose that they should be constructed in the case of each block of dwellings of a concrete slab with a wide spread. By the adoption of this method of construction any danger from the exertion of lateral pressure on the tunnel will be avoided. The change will involve an estimated cost for foundations for 1,050*l.* in addition to the estimate of 49,676*l.* for the erection of the six blocks, but, having regard to the saving above referred to, it does not appear probable that this extra cost will appreciably affect the estimated financial results as reported by the Finance Committee on March 25 1902. We recommend that an additional expenditure of not exceeding 1,050*l.* in respect of the foundations of four blocks of working-class dwellings on the Preston's-road site, Poplar, be sanctioned."

Dr. Longstaff pointed out that the facts mentioned in the report showed that in this work, as in the case of the foundations of Vauxhall Bridge, either the late Engineer had been rash or the present Engineer was over cautious.

The recommendation was agreed to.

Third-class Season Tickets.—A long Report was submitted by the Local Government and Taxation Committee on the question of the issue of third-class season tickets on railways. It was shown that the total number of stations within a distance of twenty miles of London for which third-class season tickets are now issued is 232, or 47 per cent. of the number for which first-class season tickets are issued, viz., 489. It was recommended that the Report should be sent to the Board of Trade. The Report was adopted.

Sewer, Southwark.—It was agreed that the tender of Mr. Clift Ford, amounting to 5,638*l.* 8s. 1d., for the reconstruction of main sewer in Union-street, Southwark, between Gravel-lane and Southwark Bridge-road, be accepted.

Electric Supply Bill.—The London County Council (Electric Supply) Bill was approved and it was agreed to petition for leave to bring in the Bill.

London Building Act, 1894 (Amendment), Bill.—The Parliamentary Committee reported as follows:—

"In accordance with the instructions of the Council on November 4 last, we have prepared the London Building Act, 1894 (Amendment), Bill to amend the provisions of the London Building Act, 1894, relating to safety from fire, on the general lines indicated in the Report of the Building Act Committee presented on that date.

The proposals in the Bill may be shortly summarised as follows—

1. To require adequate means of escape from any new building, of which the level of the upper surface of any floor is of a greater height than 50 ft. above the level of the footway, to be provided for persons employed or dwelling in or frequenting or resorting to any story of such new building as may be above such height; this constitutes an amendment of Section 63 of the London Building Act, 1894, which provides for means of escape from the upper stories of buildings of which the height, calculated in a similar manner, exceeds 60 ft.

2. Similarly to require means of escape to be provided before January 1, 1908, in any existing building, other than a dwelling-house occupied by not more than one family, which exceeds the 50 ft. limit as calculated above.

3. To require adequate means of escape from fire to be provided in any building or part of a building, not being a dwelling-house occupied by not more than one family, in which sleeping accommodation for more than forty persons is provided or in which over forty persons are employed.

4. To amend Section 74 of the Act of 1894 by making provision with regard to the walls, floors, or other structures which separate one building from another, or one set of rooms from other sets of rooms in the same or other buildings, and with regard to means of escape from buildings used partly for trade and manufacture and partly as dwelling-houses.

5. To make provision with regard to the con-

struction of, and the materials to be used in, the roof of a shop projecting beyond the main front of a building of which it forms part, and in which building persons are employed or sleep, and to require, unless other means of escape from fire are provided, a passage or passages to be constructed to form separate and direct means of communication between the street and the main building; and

6. To make provisions with regard to the construction of lift shafts in buildings other than dwelling-houses occupied by not more than one family.

Dealing with the means of escape from high buildings or buildings in which over forty persons work, or in which sleeping accommodation for over that number of persons is provided, we have specially provided that this Bill, if passed, shall not apply to buildings the use of which is at present regulated under the Factory and Workshop Act, 1901, or under Acts relating to common lodging-houses in London.

The Council will remember that before it decided to promote this Bill it had been in communication with the Home Secretary, and it may, therefore, be of interest to report that a letter has now been received from the Home Secretary, to whom a copy of the draft proposals was sent, which leads us to hope the Home Office will favourably consider the Bill when it is before Parliament.

We have given directions for copies of the Bill to be circulated to all the members of the Council, and we recommend that the London Building Act, 1894 (Amendment), Bill, be approved; that the seal of the Council be affixed to a petition for leave to bring in the Bill, and that the Bill and petition be deposited pursuant to the Standing Orders of Parliament, with such necessary alterations (if any) in the Bill as the Parliamentary Committee may consider desirable."

The following amendment was moved by Captain Hemphill, second by Alderman Dew, "That the word 'thirty' be substituted for the word 'forty' in the third and fourth lines of Clauses 12 (*a*), 13 (i.) (*b*), and 13 (ii.) and in the sixth and seventh lines of Clause 25 (i.) (*b*)."

Captain Hemphill said that it was no use spending large sums of money on the Fire Brigade if they did not take care that buildings in which workpeople were employed, and where poor people slept, were not provided with means of escape from fire. They would be told that it would be no use altering the number to thirty, as forty was the number mentioned in the Factory Acts, and that the House of Commons would not carry the alteration into effect. The Council had nothing to do with that; their duty was with the public.

Mr. Dew said that in a large number of cases owners of property had been able to show that they employed only thirty-eight or thirty-nine people, and it was desirable in the interests of these people to make the alteration suggested.

Dr. Longstaff, Chairman of the Building Act Committee, opposed the amendment.

Mr. Beachcroft said the Bill had been hastily prepared, and he hoped, as the subject was full of difficulties, that they would not go on with it until next year.

Mr. Burns, M.P., strongly supported the amendment, and Mr. Radford, Chairman of the Committee, opposed it.

The amendment was, however, carried by 48 to 23.

Mr. Stuart Sankey moved a further amendment in the following terms:—(*a*) "In cases where any building within the meaning of this Act is situate within the City this Act shall be read as if the Corporation were named therein instead of the Council. (*b*) That this Act shall not apply to the City unless it be adopted by a resolution of the Common Council." He complained that the Bill had been hurriedly framed by the Committee, and the result was that there had been no time to consult the City. They would have either to amend the Bill, or to meet the opposition of the Corporation in the Committee-room. The Committee of the Council had drafted a Bill of a drastic character; and to carry it out would cost hundreds and thousands of pounds. The whole measure had been hastily framed because of the fire in Queen Victoria-street. Mr. Sankey proceeded to analyse the Bill, pointing out how injuriously it would affect the City, how onerous were its provisions, and how drastic its penalties.

Mr. Alderman Alliston seconded the amendment, because he thought that if the City of London were exempted from the Bill at once it would be better than fighting out the question in the House of Commons.

Dr. Longstaff, Chairman of the Building Act Committee, said he could not detect a single argument in Mr. Sankey's speech which would not apply equally to districts outside the City.

Mr. Henry Clarke, the deputy chairman, said that Mr. Stuart Sankey did not wish that the Bill should not be inoperative in the City. He only desired that it should be put in force by the Common Council.

Mr. Burns said it would be a calamity to exempt the City from the operation of the Act. It would be contrary to the wishes of the jury at the Queen Victoria-street fire, and also to the views of Sir Homewood Crawford, who represented the City.

Mr. McKinnon Wood said the trend of legislation during the past few years had been in the direction of placing the City in line with other Boroughs in London.

Mr. Beachcroft said that it was quite clear, after the experience of the Queen Victoria-street fire, that it would never do to treat the City differently from any other part of London.

Mr. Sankey asked leave to withdraw his amendment, but the Council refused, and demanded a division. On a show of hands there were only four in favour of the amendment. The Council then attempted to force a division, and, upon one being called Mr. Sankey and Mr. Alliston left the Council Chamber. As there were no tellers, the division was not taken. The recommendation of the Committee was then agreed to.

The Works Department.—The Works Committee submitted the following half-yearly statements of works completed by the Works department. We omit the several tables:—

"In accordance with standing orders, we append to this report statements showing the estimated and actual cost of (I.) estimated works, and (II.) jobbing works completed during the half-year ended September 30, 1902. The eighteen estimated works included in Statement No. I. are those which have been actually completed and certified during the half-year, and comprise, with one exception, the whole of the works completed within that period. The erection of the superstructure of Horton Asylum, which was commenced in September, 1898, was completed during the half-year, but the measuring up of the work, which is being done by an outside firm of quantity surveyors, is not yet completed. . . . The total cost of the works included in the statements gives no indication of the turnover of the department, because some of the expenditure on these works occurred previous to the half-year in question, while on the other hand a large part of the expenditure during the six months was upon works which are still unfinished. The approximate expenditure on estimated works for the half-year was 158,000*l.* The net result of execution of the eighteen works included in the statement is a balance of cost below final estimate of 9,629*l.* 2*s.*, equal to nearly 10 per cent. The Council will note with satisfaction that seventeen of the works have been carried out at a cost below final estimate, while in the case of one work only (No. 18) has the amount of the final estimate been exceeded. The standing orders provide that we shall obtain the Council's approval to any excess of cost over final estimate, and it is therefore necessary that we should ask the Council to approve the excess [12*l.* 8*s.* 4*d.*] in the case of this work. . . . The number of estimated works referred to us for execution and not yet included in the half-yearly statements of completed works submitted to the Council in accordance with standing orders is fifty, representing an estimated expenditure of approximately 1,157,815*l.* In the case of five works, viz., Horton Asylum—erection of superstructure, Horton Asylum—erection of central station, Horton Asylum—epileptic colony, Hackney Wick sewer and the diversion of the northern low-level sewer, Lots-road, we have ascertained that the actual cost will exceed the amounts of the accepted estimates, but it is impossible to state the amount of the excess until the works have been measured and the accounts agreed. It does not, of course, follow that the cost will in all these cases exceed the amounts of the respective final estimates, and in the case of at least one work we believe that this will not be the case. The progress and cost of the other works in hand is at present satisfactory. Statement No. II. shows the results of the execution of jobbing works (*a*) during the year 1901-2 and (*b*) during part of the year 1902-3, the result being balances of cost below schedule value of 1,728*l.* 3*s.* 2*d.* and 294*l.* 18*s.* 3*d.* respectively."

The recommendation was agreed to after discussion, in the course of which it was suggested by one or two speakers that some of the work had been sublet by the Department, and it was on such work that some of the profits had been effected.

Theatres.—The following proposals have been agreed to:—

Fire-resisting screen at the Islington Empire at the Royal Agricultural Hall (Mr. R. Venner).

Fire-resisting screen, Royalty Theatre, Dean-street, Soho (Mr. W. Emden).

Fire-resisting screen, Tivoli Music Hall, Strand (Mr. W. Emden).

Quantities.—An offer of Messrs. Fowler & Hugman, who took out the quantities for Blackwall Tunnel, to take out the quantities for the construction of Rotherhithe Tunnel, was agreed to.

Greenwich Tunnel—Commemorative Tablets. The Bridges Committee reported as follows:—

"We have had under consideration the question of obtaining tablets to commemorate the construction of Greenwich Tunnel, and have obtained designs from Messrs. J. W. Singer & Son, Ltd., to supply and fix two bronze tablets for the sum of 250*l.* We may state that the cost of the two tablets at Blackwall Tunnel was 350*l.* There is a balance on Messrs. Cochrane & Sons' contract out of which the expenditure can be met. We recommend that an expenditure of 250*l.* be sanctioned for fixing two commemorative tablets at Greenwich Tunnel, and that the offer of Messrs. J. W. Singer & Son, Ltd., to do the work for this amount be accepted."

Mr. Beachcroft moved and Lord Carrington seconded to reduce the amount to 100*l.*, and, after discussion, this was agreed to by 43 to 12.

Assistant for the Engineer's Department.—Authority was given for the appointment in the Engineer's Department of an additional assistant at a commencing salary of 500*l.* a year.

Tramways.—The Highways Committee recommended, and it was agreed,

"That the estimate of 605*l.* submitted by the Finance Committee be approved; and that the expenditure of a sum not exceeding 1,370*l.* be authorised in connexion with the reconstruction, for electrical traction, of the Westminster to Tooting, &c., section of the London County Council Tramways, for reconstructing two short connecting lengths of tramways close to the Elephant and Castle, and two across St. George's Circus, and for the doubling of the present single line at the Tooting terminus.

That the offer of Messrs. J. G. White & Co. to carry out the work specified in the above resolution at prices based upon their existing contract with the Council for the reconstruction of the Tooting to Westminster, &c., lines be accepted; that the work be carried out under the supervision of Dr. Kennedy, under his agreement with the Council.

That the preliminary capital estimate of 4,000*l.* submitted by the Finance Committee be approved; that the expenditure on capital account of sums not exceeding, in all, that amount be authorised, for the preparation of plans, the making of surveys, &c., in connexion with the reconstruction, for electrical traction, of the Council's (Northern) Tramways, leased to the North Metropolitan Tramways Company; and that the Highways Committee be empowered to make the necessary arrangements for the engagement of the outdoor portion of the additional staff required for this work."

Mr. Crooks moved—"That the Council do call a conference of all the administrative authorities of London to consider the present lack of employment, and to make representations thereon to the Secretary of the Home Department and the President of the Local Government Board, and, if necessary, to call a further conference of all public bodies throughout the United Kingdom, with a view of approaching his Majesty's Government and urging upon them the necessity of a national scheme for dealing with this problem."

Mr. Macdonald seconded, and the motion was carried unanimously.

The Council adjourned shortly before eight o'clock until Tuesday, January 20.

BOOKS RECEIVED.

MODERN SCHOOL BUILDINGS. By Felix Clay, B.A., Architect. (B. T. Batsford. 25*s.*)

THE ARCHITECTURE OF GREECE AND ROME. By the late W. J. Anderson and R. Phené Spiers, F.S.A. (B. T. Batsford. 18*s.*)

WHO'S WHO: 1903. An Annual Biographical Dictionary. (Adam & Charles Black.)

GARDENS OLD AND NEW. Vol. II. Edited by John Leyland. (Offices of *Country Life*.)

ANDREA PALLADIO; HIS LIFE AND WORKS. By Banister F. Fletcher, A.R.I.B.A. (Geo. Bell & Sons.)

RESTORATION OF CLAVERLEY CHURCH.—All Saints' Church, Claverley, six miles from Bridgnorth, was reopened for Divine worship on the 7th inst. The work of restoration has been carried out in accordance with the plans of Mr. W. Wood Bethell, and the estimate of the architect was 4,500*l.* The work included the necessary repairs to roofs and walls, the lowering of the floor to its original level and so unearthing the bases of the Norman columns, the removal of the galleries. The plaster and whitewash have been taken from the walls, and this led to the discovery of some rare examples of Norman art as already mentioned by us.

THE LATE MR. FOURDRINIER.

MANY who have had business relations of various kinds with this journal will hear with great regret of the death of Mr. Douglas Fourdrinier, who has been publisher of the *Builder* for forty years, and whose death has taken place under peculiarly sad circumstances. He has been one of the victims of that terrible disease, cancer, which the medical profession are hoping to find some means of curing or eradicating. Some little time since he underwent an operation for the removal of a cancerous growth in the tongue, which appeared to be successful, and it was hoped that he might live for some years. Not long after, however, the disease recurred, and he had to be told, and to tell his friends, that his days were numbered. Happily, it may be said, both for himself and for those who loved him, his days were shorter even than was predicted, and he was spared from a long extension of lingering illness. He died on Wednesday morning the 17th inst., at his house in the West Kensington district, to which he had quite recently removed from Walton (Surrey). He was sixty years of age.

Mr. Fourdrinier was of an old Huguenot family, who migrated to England in (we believe) the seventeenth century; and his position as publisher of an architectural paper had a certain hereditary suitability; for one of his ancestors was Paul Fourdrinier, well known in his day as the engraver of many architectural subjects in Kent's and other illustrative publications, and Paul Fourdrinier's son was the inventor of an important paper-making machine. To Henry Fourdrinier, the father of Paul the engraver, there is a memorial tablet in St. Mary Woolnoth Church.

Mr. Douglas Fourdrinier was known among his friends as a most admirable amateur actor; in fact on the stage there was nothing of the "amateur" about him, so far as style and finish in acting went. He was an admirable man of business, and all who had to see or correspond with him on the business of his publication will bear witness to his courteous and amiable manners.

Mr. Fourdrinier leaves a wife and four children.

Illustrations.

DESIGN FOR A ROYAL MEMORIAL CHAPEL.

THIS design was submitted in the last competition for the Tite Prize, under the motto "Bramante." The designer is Mr. John Swarbrick, of Manchester, who has since qualified for election as an Associate R.I.B.A.

The design is based, in accordance with the conditions, upon a sketch plan left by Leonardo da Vinci, and the designer sought to make his treatment of it expressive of joyous thanksgiving for noble lives. The chapel was considered as the central feature of an extensive scheme, enclosed by a colonnade, and comprising ornamental sheets of water. The materials were intended to be externally Portland stone, with white marble statuary; and internally Portland stone, a little black marble, some bands and all carved enrichments of white marble, the plain clerestory shafts, and certain unenriched dados, and friezes of polished pale green-streaked marble.

The decorative treatment was to consist mainly of carving and sculpture, with a sparing use of coloured marble inlay, mosaic, and pigment. The lower portion of the exterior is strengthened in effect by horizontal rustication, which is terminated by a miniature colonnade. The two small campaniles, at the entrance, contain spiral staircases—one for ascent and the other for descent. The most prominent external features are the plain counter-forts or buttresses, crowned with emblematic statuary, representing the Virtues. An inscribed frieze extends around the octagon, and, beneath, a band containing the haloed heads of saints.

The large dome is supposed to be covered with copper, but the small cupolas and little lantern spire are of Portland stone and were intended to be secured at the base with metal bands to counteract the thrust. The cross at the summit to be of gun-metal.

PLANS FOR A TUBERCULOSIS SANATORIUM.

THESE plans were submitted by Mr. Arnold Mitchell in the recent competition for a Royal Sanatorium for Tuberculosis. They contain points which may be of interest at a time when the subject is being a good deal discussed. The following is the architect's explanation of his intentions in the plan:—

"In the absence of specific directions other than that the site must slope towards the south, and that 100 patients must be accommodated—twelve with two rooms each and eighty-eight with one room each—an absolutely free hand was given to competitors.

The scheme embodied in these plans was prepared by Mr. Arnold Mitchell after consultation with Dr. Jobson Horne, the doctor doing the essay work and the architect the planning.

The main idea is that the whole building shall be so arranged as to secure the maximum of sunshine and the maximum of air. The whole of the patients' rooms are on the main front, facing south. This front is curved in segmental form to secure further shelter, and each patient's room has windows in two facets. No room is covered in any way with a verandah. The verandahs, however, form a vital part of the scheme. These have been arranged on the same line of front between the rooms, and can be opened or closed at pleasure, both back and front, obtaining an absolute blow through. The patient, therefore, whether in the room or in the verandah, has the fullest advantage of sunshine and air without the disadvantage attendant upon the ordinary arrangement. A further gain is derived in consequence of the division of the patients' rooms into blocks of eleven—allowing grouping of different stages of the disease.

The entrance hall is placed in the rear of the patients' block in order to secure perfect quiet and tranquillity on the part of the patients.

An endeavour has been made to carry out the sunshine and blow-through idea, even into the servants' quarters, all the rooms here being in single lines and with south aspect. The better-class patients are housed in a separate block, balanced on the other wing by the nurses' building. These have been treated separately, so that as far as possible the residents in these blocks may be free from the feeling of being part of a large institution; their partial detachment and their open prospect goes a long way in this direction.

The service difficulties must necessarily be great in such a building, but in this case they are no worse than those commonly met with in the majority of large hospitals and asylums. The fall in the ground permits a through service corridor below the ground floor level of the main block, and this works out on the ground level for the detached buildings. Meals would be conveyed in covered trollies to the serving-rooms provided. The resting-rooms, outdoor dressing-rooms, and doctors' rooms are also upon this level. The serpentine covered terrace shelter is so planned that much or little sun and wind can be obtained at various times."

ELECTRIC STATION ON THE SEVERN.

THE original water-colour drawing from which the illustration is taken was made from the building after its erection, and hung in this year's exhibition of the Royal Academy.

Externally Ruabon pressed bricks and Grinshill stone dressings have been used for the walls, and the roofs are covered with grey Aberllefeni slates.

The electrical installation was supervised by Messrs. Burstall & Monkhouse, of Westminster. The generating works are adequate for lighting the whole of Messrs. Pryce Jones's manufacturing and business premises, in addition to supplying the motive power for machinery. The boilers were supplied by Messrs. Davy, Paxman, & Co. A portion of the premises on three floors is fitted up as a laundry with the latest machinery.

Messrs. Ed. Davies & Sons, of Newtown, were the general contractors, and the constructional steelwork was supplied by Messrs. Rubery & Co. Mr. George Hornblower, of London, was the architect.

LONDON AND COUNTY BANK, CHATHAM.

THESE new premises, situated at the junction of Railway-street and High-street, Chatham, have been recently completed. The front walls are faced entirely with Portland stone, and the roofs are covered with green Westmoreland slates. The joiners' work to the bank portion of the building is all constructed in teak, and the fittings in the bank office are of the same material. On the two floors over there are arranged suites of offices and rooms for a caretaker.

The carved panels on the frieze are designed in connexion with the Naval and Military Associations of Chatham.

Mr. W. J. Adcock, of Dover, was the general contractor, and Mr. C. L. Gooch acted as clerk of works. The architect is Mr. W. Campbell Jones.

No. 1, BERKELEY-SQUARE, W.

THIS is a new house occupying an irregular-shaped site with three frontages, the principal fronts having west and south-west aspects, and the best views being from the bay over the grounds of Lansdowne House, and down Berkeley-street to Piccadilly.

The fronts are faced with Portland stone, and the woodwork is oak. The building was carried out by Mr. John Garlick, of Sloane-street, from the designs of Mr. R. G. Hammond, of London.

The drawing was exhibited in last year's Royal Academy.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lewisham.—(*a*) That the resolution of the Council of January 28, in regard to the erection of a two-story addition at the rear of No. 30, Burnt-ash-road, Lee, be rescinded. (*b*) That the Council do not consent to the erection of a two-story addition at the rear of No. 30, Burnt-ash-road, to abut upon Taunton-road (Messrs. G. Bush & Son for Mr. A. Fish).—Agreed.

Lines of Frontage and Projections.

Lewisham.—A one-story store-shed at the rear of No. 1, Ardgowan-market, Ardgowan-road, Lewisham, to abut upon Dowanhill-road (Mr. A. C. Baker for Mr. G. Pauling).—Consent.

Lewisham.—A house on the east side of Bromley-road, Catford, to abut upon Inchmery-road (Mr. W. Bailey for Mr. J. Reeves).—Consent.

Hackney, North.—That the application of Mr. G. R. Woodruff for an extension of the periods within which the erection of houses with bay-windows on the east side of Mount Pleasant-lane, Upper Clapton, between Baker's Hill and No. 121, Mount Pleasant-lane, was required to be commenced and completed, be granted.—Agreed.

Hampstead.—Two-story bay-windows and wood and tile pent-roofs in front of proposed houses, Nos. 148 to 158 (even numbers only), inclusive, Fordwych-road, Hampstead (Messrs. Done, Hunter, & Co. for Mr. H. Neal).—Consent.

Lewisham.—That the application of Messrs. Johnson & Aldridge for an extension of the period within which the erection of buildings on the southern side of Manor Park, Lee, was required to be completed, be granted.—Agreed.

Lewisham.—A conservatory addition at the rear of No. 179, Hither Green-lane, Lewisham, to abut upon Ennersdale-road (Messrs. J. Outhwaite & Son for Mr. J. Outhwaite).—Consent.

Marylebone, West.†—A porch on the north side of No. 33, Montagu-square, to abut upon Montagu-place (Mr. F. W. Foster for Mr. H. S. Cantley).—Consent.

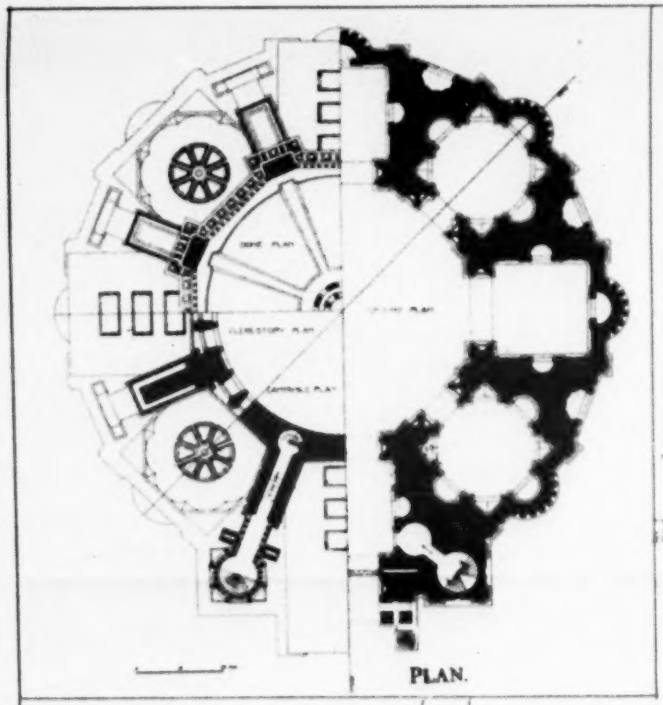
Norwood.—A conservatory at the flank, and the retention of a summer-house at the rear of No. 20, Wyneham-road, Camberwell, abutting upon Elmwood-road (Mr. A. E. Mullins for Mr. Percy).—Consent.

Brixton.—Retention of a wood, glass, and zinc roof at the side of No. 144, Coldharbour-lane, Brixton, abutting upon Eastlake-road (Mr. G. T. Stevens).—Consent.

St. Pancras, West.—An addition to the London Temperance Hospital, on the east side of Hampstead-road, St. Pancras (Mr. J. A. Tregelles for the Board of Management of the hospital).—Refused.

Bethnal Green, North-East.—A one-story shop upon the forecourt of No. 394, Hackney-road, Bethnal Green (Mr. E. C. Homer for Mr. H. Warden).—Refused.

Fulham.—Two houses with shops on the west side of Munster-road, Fulham, to abut upon Horder-road (Mr. J. Hodsett for Mr. B. M. Goldhill).—Refused.



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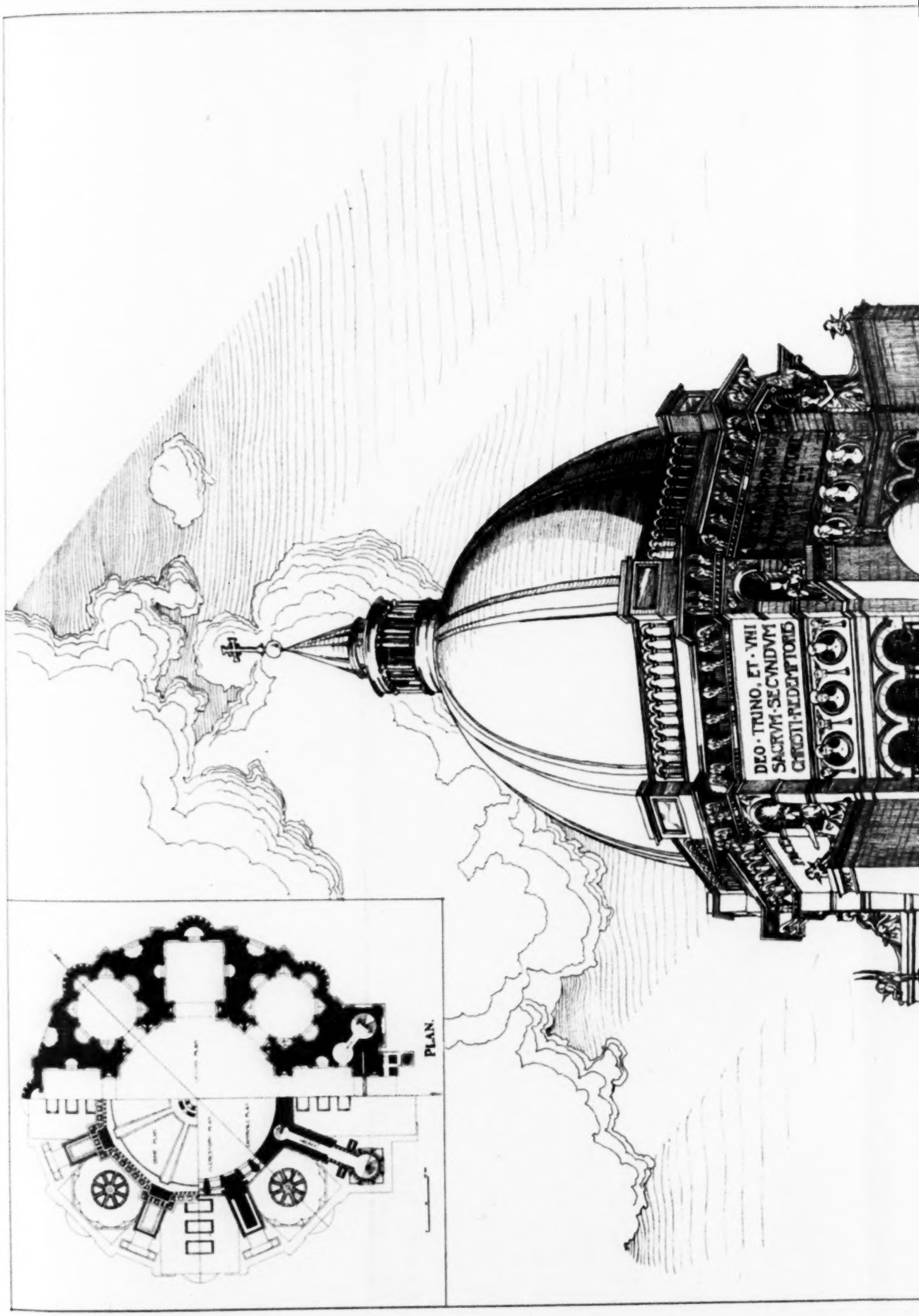
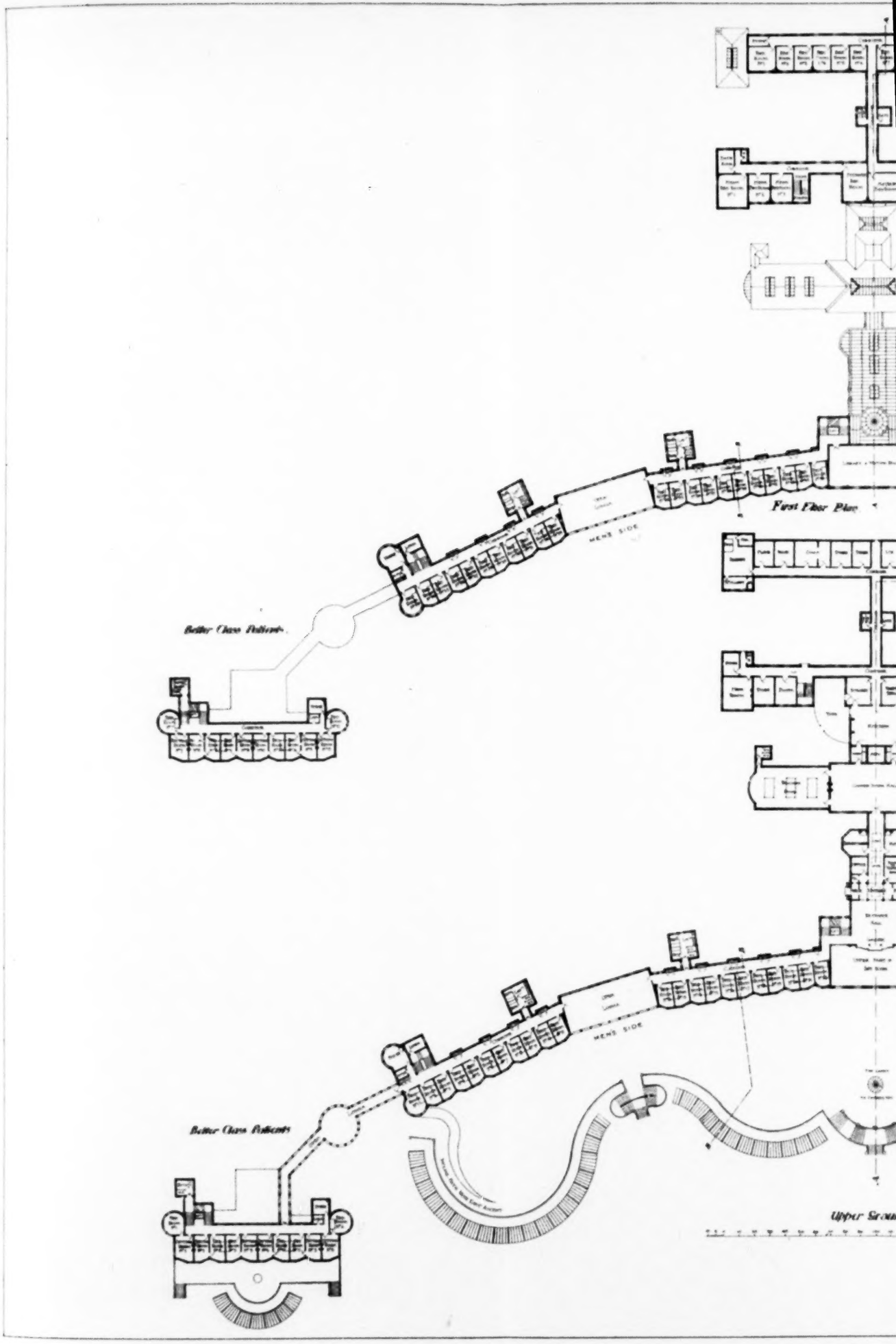


PHOTO-LITHO SPRAGUE & Co. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

DESIGN FOR A ROYAL MEMORIAL CHAPEL.—By Mr. J. Swarbrick.

Submitted in Competition for R.I.B.A. Soane Medallion, 1902.



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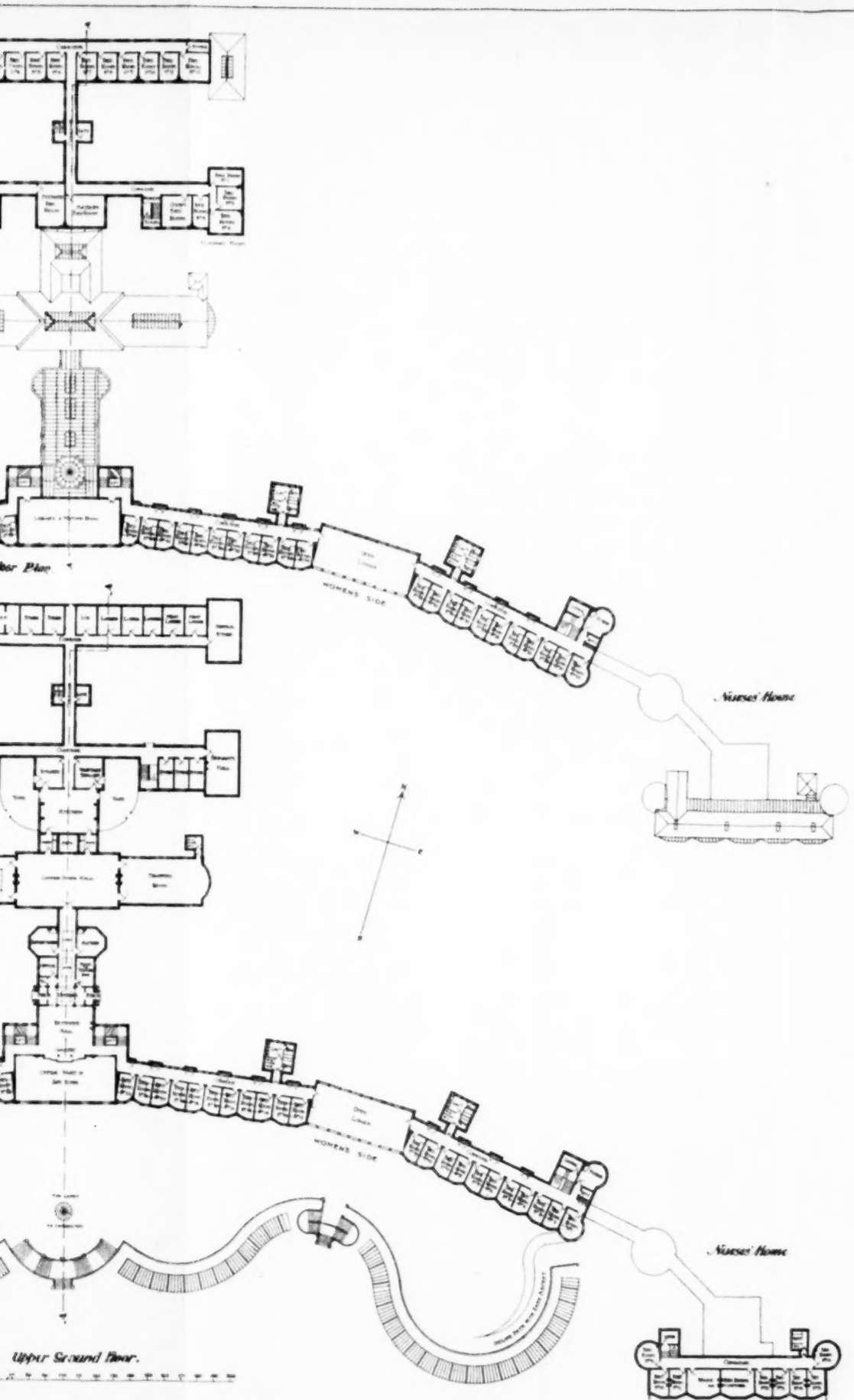

PHOTO-LITHO. SPRAGUE & Co. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

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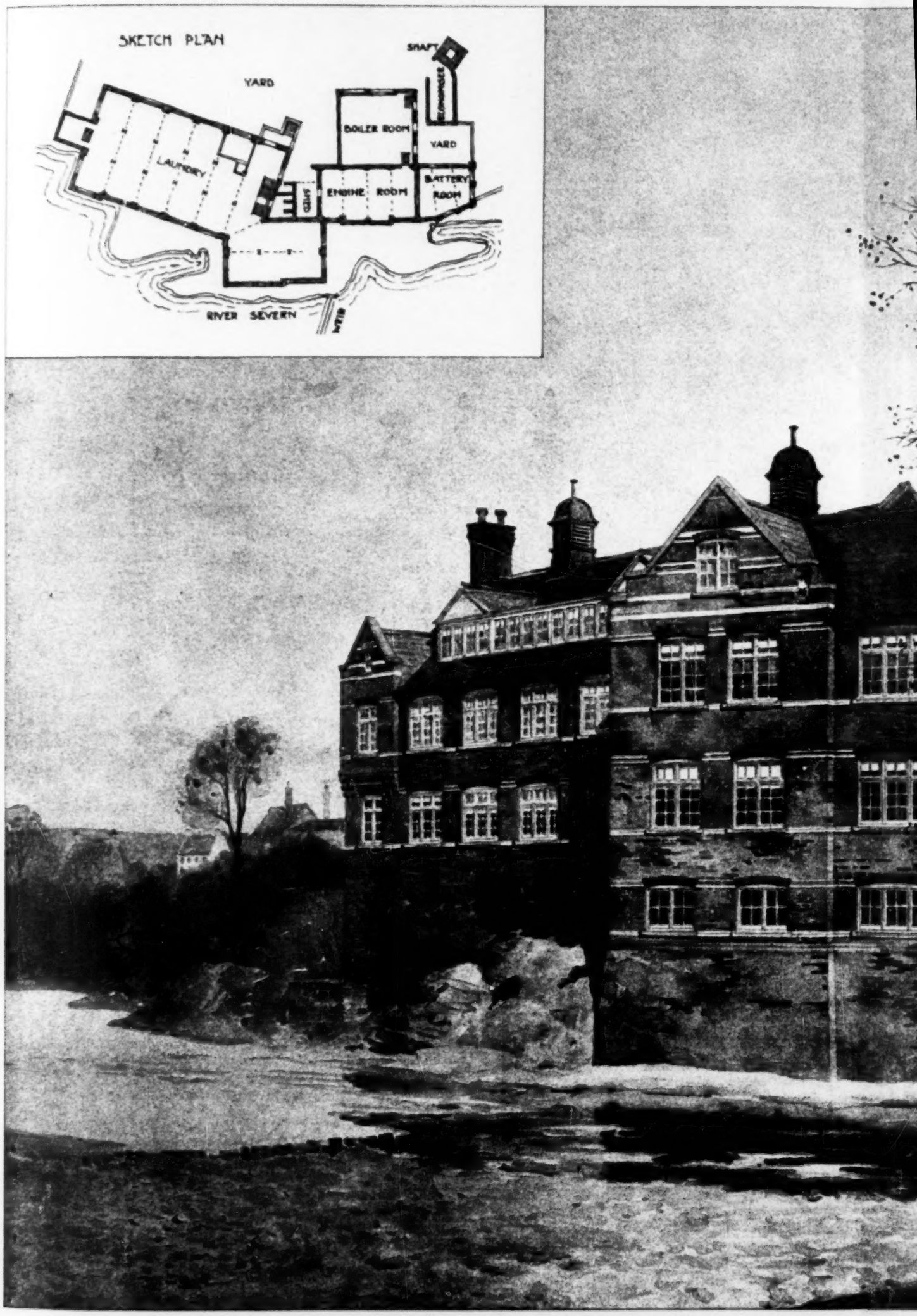
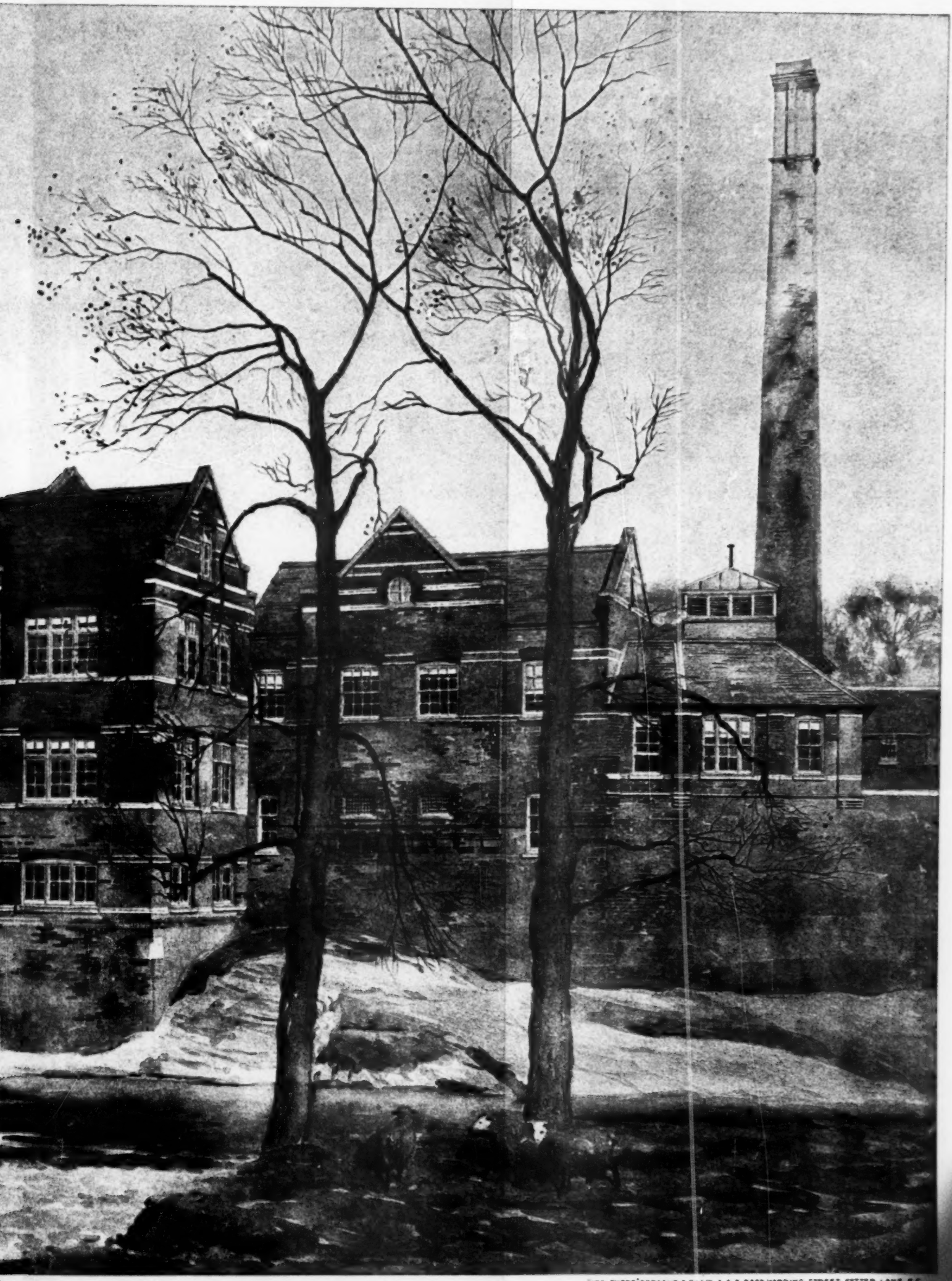


ELECTRIC STATION, &c., ON THE SEVERN.—



"IBA" PHOTO" SPRAGUE & C° LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

SEVERN.—Mr. George Hornblower, F.R.I.B.A., Architect.

A NEW BANK AT CHATHAM.

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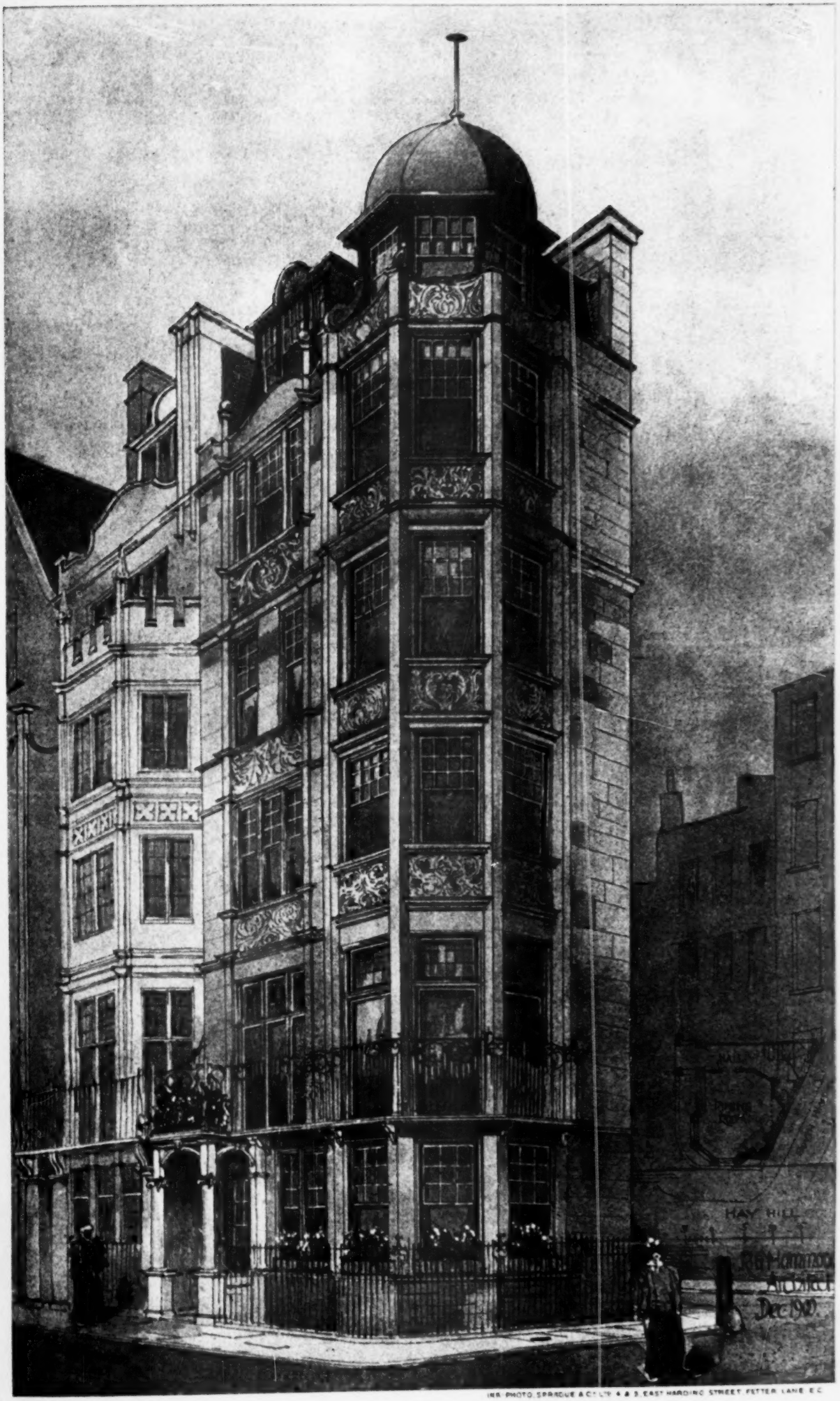

INS. PHOTO. SPRAGUE & Co. LTD. 4 & 5 EAST HARDING STREET FETTER LANE E.C.

Norwood.—One-story shops on the east side of Norwood-road, Lambeth, between No. 333 and Norfolk Lodge (Mr. C. M. Quilter for Mrs. F. Parker).—Refused.

Poplar.—The retention of an illuminated sign in front of the Palace Theatre, Bow-road, Poplar (Mr. B. Crewe for Mr. C. Macnaghten).—Refused.

Width of Way.

Bethnal Green, South-west.—The completion of the erection of a warehouse building commenced to be erected on the south side of Princes-court, Bethnal Green (Mr. R. Button)—Consent.

Bermondsey.—A one-story building on the east side of Weston-street, Bermondsey (Mr. E. Crosse for Messrs. J. Salomon & Co.)—Consent.

Limehouse.—Re-erection of the Waterman's Arms beerhouse on the south side of Maroon-street, Limehouse, to abut upon Conder-street (Messrs. Crossman, Prichard, & Co., for Messrs. Mann, Crossman, & Paulin, Limited).—Consent.

Lines of Frontage and Width of Way.

Woolwich.—That the application of Mr. A. E. Habershon on behalf of Mr. J. Stevens for an extension of the periods within which the erection of three houses at the south-east end of Elm-grove, The Slade, Plumstead, was required to be commenced and completed, for consent to an alteration in the position of two of such houses, and the erection of an additional house, be not granted.—Agreed.

Lines of Frontage, Width of Way, and Construction.

City.—An enclosed corridor across Freeman's-court, City, to connect No. 1 with the rear of No. 93, Cheapside (Mr. B. Norman for Messrs. Viney, Price, & Goodyear).—Refused.

Hampstead.—A wood and iron office in the garden at the side of No 152, Finchley-road, Hampstead (Mr. J. D. Hunter for Messrs. C. W. French & Sons).—Refused.

Width of Way and Height of Buildings.

Deptford.—Buildings on the north and south sides of Blake-street, New King-street, Deptford, to a height exceeding the proposed width of Blake-street, and with the boundary of the space between the proposed block of buildings on the north side of Blake-street and Barnes'-alley, at less than the prescribed distance from the centre of the roadway of the latter street (Mr. R. Robertson for the Housing Committee of the Council).—Consent.

Space at Rear.

Lewisham.—A modification of the provisions of Section 41 with regard to open spaces about buildings, so far as related to the proposed erection of a house on the east side of Radford-road, Hither Green, with an irregular open space at the rear (Mr. J. Stanford).—Refused.

Deviation from Certified Plans.

Strand.—Certain deviations from the plans certified by the District Surveyor under Section 43 of the Act so far as relates to the proposed rebuilding of No. 1, Coventry-street, St. James's, Westminster (Messrs. H. Cooper & Sons for Mr. H. Appenrodt).—Refused.

Formation of Streets.

Wandsworth.—A deviation from the scheme sanctioned on November 20, 1900, for the formation of new streets on the Du Cane and Crooke Ellison estates on the south-west side of Streatham High-road, Streatham, so far as relates to the position of the proposed continuation of Ellison-road (Messrs. Montagu Holmes & Son and Mr. W. Grellier).—Consent.

Lambeth, North.—That an order be issued to Messrs. R. B. Grantham & Son, sanctioning the formation or laying out of a new street for carriage traffic to lead from Webber-street to Short-street, New-cut, Lambeth (for the Ecclesiastical Commissioners).—Consent.

Clapham.—That an order be issued to Mr. J. Cobeldick sanctioning the formation or laying out of new streets for carriage traffic upon the Heathfield Estate, West Side, Clapham Common, Clapham.—Consent.

Hackney, North.†—That an order be issued to Mr. C. Cheston, sanctioning the formation or laying out of a new street for carriage traffic to lead from Warwick-road to Mount Pleasant-lane, Hackney, and in connexion therewith the widening of a portion of Mount Pleasant-lane (Lord Amherst of Hackney).—Consent.

Hampstead.†—That an order be issued to Messrs. Hart & Waterhouse refusing to sanction the formation or laying out of a new street for carriage traffic, out of the north-east side of East Heath-road, Hampstead (Mr. H. Bailey)—Agreed.

Hampstead.—That an order be issued to Mr. E. Owers refusing to sanction the formation or laying out of a new street for carriage traffic upon the Burgess Park Estate, Finchley-road, Hampstead (Major A. Burgess and Major H. Burgess).—Agreed.

Cubical Extent and Construction of Buildings.

Deptford.—The erection at Messrs. Farquharson Bros. & Co.'s wharf, approached from the north side of Rollins-street, Deptford, of two sheds, each to exceed in extent 250,000, but not 450,000, cubic feet, and to be used only for the purpose of the storage of timber, and the site of such shed to be without a layer of concrete (Messrs. Farquharson Bros. & Co.).—Consent.

Working-class Dwellings.

St. Pancras, East.—Dwelling-houses, to be inhabited by persons of the working class, and proposed to be erected on a site adjoining St. Martin's-gardens and Pratt-street, Camden Town (Mr. J. Farrer).—Refused.

Dwelling-houses on Low-lying Land.

Woolwich.—Two houses on low-lying land situated at the south-east corner of De Lucy-street, facing Abbeywood-road, Plumstead (Mr. J. T. Young for Mr. C. E. Pearson).—Consent.

**** The recommendations marked † are contrary to the views of the Local Authorities.*

THE POST OFFICE LONDON DIRECTORY.

THE Post Office London Directory (the 104th annual publication) has just been issued by Kelly's Directories, Ltd. (182, High Holborn, W.C.). No alteration has been made in the arrangement of the various divisions of the Directory, experience, no doubt, having shown that if the work is to be confined to one volume the present arrangement is a good one; but we are inclined to think that the "streets" section might be separately issued. The Directory, invaluable as it is, has grown to an inconvenient size. The opening of the Post Office London telephone system and the rapidly increasing use of the telegraph and telephone services have added very considerably to the number of additions in the "Commercial" division, where these particulars are given, whilst in the "Conveyance" section the population of the places mentioned in the Census Reports 1901 is given as far as these Reports have been issued. The Directory, which has been brought up to date, now contains 3,300 pages, exclusive of advertisements, an increase of forty pages over the edition for 1902. As an example of the amount of labour caused by a simple change of name, the publishers mention the amalgamation of the Union Bank of London with Messrs. Smith, Payne & Smiths, and their allied firms, under the style of the Union of London & Smiths Bank, Limited, which has necessitated the name being altered in more than nine hundred places, chiefly in the Banking section.

With this excellent work, which is ably edited, is again issued a very useful map of London, mounted on linen.

Correspondence.

CHEAP COTTAGES.

SIR,—The recent correspondence in the *Builder* on the subject of cheap cottages for workmen has induced me to study a form of construction employed in France, which I believe would present many advantages in economy of construction and maintenance, solidity, and appearance over that generally employed, possessing at the same time considerable improvements in a sanitary and health point of view. Cottages built on the principle I briefly describe further could be easily built for about 350*l.*, the pair to contain the accommodation required by Mr. Thos. Moody in his letter in your issue of November 22. The principle is that of the Cottancin construction, already described in the *Builder*, employing brick and cement materials in various forms with a continuous interweaving of steel-wire core throughout. The main walls of cottages built on this method consist of a combination of brick of ordinary dimensions and large brick slabs about 1 ft. 6 in. by 1 ft. 7 in. tied to the brickwork and floors by means of steel cores. These walls are supported on small brick foundations of simple caisson form, so combined with the formation of the ground floor, also of brick, as to form a solid platform floor foundation. The first floor and the staircase are formed of steel-cored cement panels so combined as to produce when boarded a soundproof, fireproof, and sanitary floor. The roof is constructed in a similar manner, and for such economical buildings would be a flat roof, attached to the walls by means of the steel cores, and made hollow so as to afford a comfortable, warm, and weatherproof covering. The usual lath-and-plaster partitions are replaced by slight partitions of the same cored brick slabs, which may be plastered, papered, or left visible as may be desired. The combined brick and brick-slab walls have the advantage of being rapidly erected, and they may be made to look very clean and effective. The exterior walls are lined on the interior with plaster slabs so arranged as to form a hollow wall with the exterior brick, and are therefore dry and warm. The floors on this method have the advantage of being fireproof, and they can be made soundproof; they are essentially sanitary, for unlike the ordinary boarded and plastered timber floor, which allows dirt and vermin to collect in its hollow space between floor and ceiling, and imbibes all water from vessels accidentally upset in the bedrooms, showing an unwholesome-looking stain in the ceiling of the living-room beneath, this floor is entirely damp-proof. The partitions are solid and are much to be preferred to the lath-and-plaster partition from a sanitary and fireproof point of view; the staircase possesses the same advantages. The partitions dividing off the kitchen and scullery may be left unplastered if formed of stoneware slabs, and can be periodically cleaned. The brick platform foundation can be left visible in the kitchen and scullery, and boarded in the living-room. This form of construction, besides being cheap to erect, has the advantage of costing little or nothing for maintenance, an important point when a net percentage on the outlay is considered. This construction, however, has not the advantage required by Mr. Moody of being readily erected by any intending builder; it is somewhat of a speciality, but this would hardly prevent its employment when its advantages are considered. I do not know as yet either whether this form of construction would meet the requirements of the by-laws, but I hope to have an opportunity of testing this for a short street of cottages I am at present designing for possible erection in the North of England.

A. VYE-PARMINTER.

Paris, December 13.

BUILDING *v.* BY-LAWS.

SIR,—Lately, when putting soil-pipes inside a warehouse, I decided that extra strong cast-iron pipes with deep sockets run with lead were the best to use. But after they were fixed the Local Board pointed out that a new by-law required them to be of lead, and insisted on having them taken out and lead ones put instead. The curious reason given was that the lead pipe was more "accessible"; whereas it was the same reason (among others) that decided me to have iron; as such pipes do not require casing, any defect arising would be at once visible. A lead pipe in a warehouse must be cased to protect it from injury, and thus be concealed from view. It has happened in my experience that such a cased lead pipe had been defective for a very long time before being discovered, on account of casing concealing it. This decided me to use iron pipe, which I still think is best for such positions.

Now, what I would ask your readers is—why should an architect's judgment be entirely overruled in matters of detail, when his only object is to use the best possible material, by the arbitrary enforcement of a cast-iron By-law insisted upon without reference to special circumstances?

CHARLES JAS. CLARK, A.R.I.B.A.

The Student's Column.

THE CHEMISTRY OF BUILDING MATERIALS.

25.—THE EXAMINATION OF OILS.

WHEN an oil of any specific description is adulterated with a cheaper oil it is generally easy to detect the presence of the adulterant, but more difficult to identify it. The accurate estimation of the proportion of the adulterant is in some cases impossible, owing to the similarity between the properties of the genuine oil and those of the adulterant; but, as a rule, it is possible to make an approximate estimate from the results of a series of tests.

Some of the most useful simple tests for oils are the determination of:—

1. Specific gravity.
2. Flashing point.
3. Colour under acid test.
4. Potassium hydrate required for saponification.
5. Iodine absorption.
6. Rate of drying.
7. Odour when heated.
8. Composition of ash.

When examining an oil of unknown quality, it is useful to have at hand a sample of genuine oil of the same description, in order that the behaviour of the two oils under the various methods of treatment may be compared.

Specific Gravity.—The specific gravity of oil may be determined by means of a specific

gravity bottle. This bottle, when filled with distilled water at 15·5 deg. C., holds a known weight of distilled water (usually either 50 grammes or 1,000 grains), and when the bottle has been filled with oil at 15·5 deg. C., instead of with water, and weighed, the difference between the weight of the dry bottle and its weight when filled with oil is noted. To find the specific gravity of the oil, divide the weight of the oil by 1,000, if the bottle be of 1,000 grains capacity; or multiply by 0·02, if the bottle be of 50 grammes capacity. The weighing is, of course, accomplished with grain weights if a 1,000-grain bottle be used, and with gramme weights if a 50-gramme bottle be used.

Another method of determining the specific gravity of an oil is by means of an hydrometer. An hydrometer is a weighted glass bulb having a long graduated stem, the weight being adjusted to suit the gravity of the liquid to be examined. The oil is poured into a cylindrical jar, warmed or cooled to 15·5 deg. C, and the hydrometer is then allowed to float in the oil. The depth to which the hydrometer sinks depends upon the gravity of the oil, but a portion of the graduated stems always remains above the surface of the oil, and the figure on the stem at the surface of the oil represents the specific gravity of the oil.

A table showing the specific gravities of some of the commercial oils was given at the conclusion of Chapter 19.

Flashing Point.—The flashing point or flash point is the temperature at which the oil emits vapour which in contact with air forms an explosive or inflammable mixture. This may be determined by means of Abel's flash point apparatus. For liquids having a flash point below 150 deg. Fahr. (66 deg. C.) the oil cup is immersed in a water-bath, but for oils having a higher flash point the oil cup is lifted out of the water-bath and placed in a copper air-bath heated by a small flame. The test consists in slowly heating the oil in a closed metal cup having a small sliding door at the top. Every time an increase of 1 deg. Fahr. in the temperature of the oil is recorded by the thermometer immersed in it the slide is slowly drawn open and a small test flame, supplied either by gas or a small oil lamp, is automatically dipped below the lid of the cup. When the oil has been heated to its flashing point, the introduction of the test flame causes the vapour confined in the cup above the surface of the oil to "flash" or burn for a moment with a blue flame.

The following table shows the flashing points of some of the common oils and spirits:—

Oil or Spirit.	Flashing Point. Degrees Fahrenheit.	Degrees Centigrade.
Benzene	Below 32	Below 0
Benzine or petroleum spirit	Do.	Do.
Shale naphtha	Do.	Do.
Coal tar naphtha	Do.	Do.
Methylated spirit	57—59	14—15
Petroleum burning oils	73—120	23—49
Turpentine spirit	93—98	34—37
Rosin spirit	97—102	36—39
Lubricating shale oils	266—365	130—185
Lubricating mineral oils	392—420	200—216
Rosin oil	310—320	154—160
Linseed oil, raw or boiled	About 500	About 260

The adulteration of linseed oil with rosin oil, or of turpentine spirit with petroleum spirit, may therefore be detected by determining the flashing point of the oil or spirit. Unfortunately, most of the fixed vegetable oils have flash points approximating more or less closely to that of linseed oil, and the determination of the flash point will not, therefore, reveal the presence of, say, cottonseed oil in an adulterated sample of linseed oil.

Sulphuric Acid Colour Test.—Place about twenty drops of the oil upon a white tile, and then allow two drops of strong sulphuric acid to fall upon the centre of the surface of the oil. The following table shows the colouring effect of the acid upon some of the commercial oils:—

Oil.	*Before stirring.*	*After stirring.*
Linseed oil, raw	Brown or greenish-brown clot.	Mottled dark brown.
,, boiled	Brown clot.	Mottled dark brown.
Cotton seed oil, crude.	Very bright red.	Dark red, nearly black.
,, refined.	Reddish brown.	Dark reddish brown.
Castor oil	Yellow to pale brown.	Nearly colourless, or pale brown.
Resin oil, brown	Bright mahogany brown.	Dark brown, with purple fluorescence.
,, pale	Mahogany brown.	Red brown, with purple fluorescence.
Petroleum lubricating oil	Brown.	Dark brown, with blue fluorescence.

A more complete list showing the effect of strong sulphuric acid upon the different oils can be seen by reference to Phillip's "Engineering Chemistry" or Allen's "Commercial Organic" analysis.

Saponification Test.—Oils derived from different sources require different quantities of potassium hydrate for complete saponification. The differences between the quantities required are not in all cases considerable, but the saponification test is, nevertheless, often very useful.

Two grammes of the oil are weighed in a flask and 25 c.c. of a standard alcoholic solution of potassium hydrate are added. The flask is then connected to a vertical condenser, heated on a water-bath, and shaken from time to time. Saponification is complete in about thirty minutes. The flask with its contents is allowed to cool, the excess of potassium hydrate is found by adding a few drops of alcoholic solution of phenolphthalein to serve as an indicator, and then titrating with standard sulphuric acid. A blank experiment is then made by boiling 25 c.c. of the alcoholic potassium hydrate in the flask alone, and titrating as before. The standard solutions are of semi-normal strength, and from the difference between the quantity of standard acid required by the potassium hydrate alone and that required when the hydrate was heated with 2 grammes of oil, the per centage quantity of potassium hydrate required for saponification of the oil can be calculated.

The following table shows the quantity of potassium hydrate required for the saponification of 100 parts of some of the commercial oils:—

Oil.	Per centage KOH for saponification.
Linseed oil	187 to 195
Cottonseed oil	191 ,, 196
Cocoanut oil	22 ,, —
Castor oil	176 ,, 181
Sperm oil	123 ,, 147
Rape oil	170 ,, 176
Mineral oils	Not saponifiable.

Rosin oil usually consists mainly of unsaponifiable hydrocarbons, but contains variable quantities of saponifiable matter and of acid bodies, which enter into combination with potassium hydrate to form neutral salts. When the rosin oil is refined with caustic soda solution these latter bodies are to a large extent removed.

Iodine Absorption.—In the iodine absorption test devised by Baron Hübl an alcoholic iodine solution is gradually decolourised by contact with the oil, the decolourisation being due to the fact that the iodine enters into combination with the fatty acid of the oil. The quantity of iodine decolourised by a given quantity of oil is different with different oils, and the proportion of iodine absorbed by the oil under examination affords, therefore, an indication of the source of the oil.

The test is applied thus: 2 grammes of the oil are dissolved in 100 c.c. of chloroform; 10 c.c. of this solution are placed in a stoppered bottle, 20 c.c. standard alcoholic solution of iodine and mercuric chloride being then added. If the solution becomes nearly colourless after standing fifteen minutes, a further addition of 10 c.c. of the iodine solution is made. The solution is then allowed to stand for two hours. The quantity of free iodine which remains in the solution is then ascertained by adding potassium iodide and starch and titrating with sodium thiosulphate. The quantity of iodine absorbed by 100 parts of oil is called the "iodine equivalent" or "iodine degree."

The following table shows the different proportions of iodine absorbed by different oils:—

Oil.	Iodine Absorbed.
Linseed oil	158 per cent.
Walnut oil	143 ,, ,,
Cottonseed oil	106 ,, ,,
Rapeseed oil	100 ,, ,,
Castor oil	84·4 ,, ,,
Olive oil	82·0 ,, ,,
Cocoanut oil	8·9 ,, ,,
Rosin oil	10 to 50 per cent.
Mineral oils	About 8 ,, ,,

Rate of drying.—Smear a slip of glass with the oil to be examined. Smear another slip of glass with oil of the same description, but known to be genuine. Place the slips side by side in water-oven, and note the length of time which elapses before the oil becomes dry, and also the appearance and degree of solidity of the dried oil.

Odour when heated.—Heat a small quantity of the sample in a small covered porcelain crucible to about 130 deg. C., and observe odour emitted. If much fish oil be present, its odour will be readily perceptible.

Composition of ash.—Cautiously burn 50 grammes of the oil in a porcelain crucible. When the whole of the oil and soot has disappeared, examine the ash. If driers have been added to the oil, the ash will contain lead oxide or other metallic compound.

Examination of volatile oils.—When examining turpentine spirit, the sample should be subjected to distillation at the temperature at which the oil or spirit boils when genuine. The specific gravity, flash point, and boiling point of the sample should also be ascertained.

COMPETITIONS.

UNDESIRABLE COMPETITIONS.—The Competition Reform Society have sent to all their members a request to refrain from competing for the Proposed Poorhouse, Motherwell, and for the Proposed Church and Church Room, Burton-wood, Lancashire, the conditions in both competitions being unsatisfactory. The Committee are endeavouring to obtain a revision of the conditions.

CEMETERY, MOTHERWELL.—In the competition for cemetery, Motherwell, the first premiated design was that submitted by Mr. Gordon T. Frew, C.E., 140, West George-street, Glasgow. The second premiated design was by Messrs. Dodd & Dodd, 37, Waterloo-street, Birmingham; and the third by Mr. Wm. Boyce, C.E., Cemetery Lodge, Cathcart.

CHURCH, &c., SOUTHEND.—The competition recently held for Church, Clergy House, and Hall at Southend, has resulted as follows:—First premiated design, by Mr. W. J. Tapper, A.R.I.B.A., 1, Raymond-buildings, Gray's Inn, London, W.C. Second premiated design (hon. mention), Messrs. Lucas & Stratton, 2, Vernon-place, Bloomsbury-square, London, W.C. Third, Mr. C. A. Nicholson, A.R.I.B.A., 2, New-square, Lincoln's Inn, W.C.

GENERAL BUILDING NEWS.

BAPTIST CHURCH, DERBY.—The foundation-stone has just been laid of a new Baptist chapel to supersede the old structure in Rutland-street, Derby. The new building, a portion of which has been erected, is situated at the junction of Pear Tree-road with Portland-road, Goodale-street, and Richmond-road. The main frontage is to Pear Tree-road, and will be in view of the whole length of Richmond-road. The chief features of the front will be the central porch with the doorway deeply recessed, three two-light traceried windows above the porch, and there will be a small tower and spire at the south-east angle. The building will be Transition in style. The plan is cruciform, having nave, north and side transepts and choir. Besides the main entrance in the centre of the front, there are two sideways leading to the vestibule by which the nave is reached, and from which access will be provided by two staircases to the end gallery over front lobbies, &c. The nave will have a sloping floor (falling towards the rostrum), and will be lighted by four two-light windows on each side, separated by buttresses. If it is hereafter found desirable, small galleries to accommodate about fifty persons in each may be added in the transepts, the windows being arranged in two tiers so as to permit of this being done. There are three vestries on the ground floor level, and with separate entrances at the west end of the church, and a choir vestry is also placed over the minister's vestry and in proximity to the choir stairs and doorway. Connecting passages lead from the baptistry to two of the vestries. In the basement will be the heating apparatus and storage for fuel. The facings are of red bricks from Sileby, and the dressings o Derbyshire stone. The windows will be glazed with lead lights and cathedral-tinted glass, and there will be green slates with red ridge tiles to the roofs. The artificial lighting will be by electricity from the town mains. Accommodation will be provided for about 500 on the ground floor and in the choir, and for some 150 in the end gallery. The land on the north side of the church will be utilised by the erection of a lecture hall to hold about 200, with retiring-room, &c., at the rear. The buildings are being erected from the plans and under the superin-

tendence of Mr. A. H. Goodall, architect, of Nottingham, whose design was selected in a limited competition, and the contract has been let to Mr. John Young, builder, of Derby.

WESLEYAN CHURCH, CARBIS BAY, CORNWALL.—The memorial stones of the new chapel which the members of the Wesleyan body at Carbis Bay are erecting were laid recently. The building faces north-east, the chief material in its construction being elvan from Treloyhan Downs, with dressings of granite from Helston. It is to be seated with pitch-pine with open timbered roof. The windows are to be figured lead-lights, and the building will be in the Gothic style. Its length is 70 ft. and breadth 56 ft., with a tower 66 ft. high. There will be no gallery, but the seating accommodation will provide for 286 people, with a pulpit on the ground floor. A minister's vestry, choir vestry, lavatories, &c., will also be provided, and a heating chamber. The contract is in the hands of Mr. J. R. Glasson, the architect being Mr. O. Caldwell (Penzance).

NEW AISLE, FISHPONDS CHURCH, BRISTOL.—On the 4th inst. the foundation stone of the new aisle, Fishponds Parish Church, was laid. The estimated expenditure for the work amounts to 1,550*l*. The new aisle, which is 20 ft. wide, is only the first part of a scheme of proposed enlargement and improvement of the church, for which plans have been prepared by the architect, Mr. W. Lingen Barker, Hereford. The next work to be undertaken is intended to be a vestry at the east end, for which an archway is being left, and then the present vestry adjoining the tower at the west end can be added to the church by means of an archway in the west wall, and seated for additional worshippers. When further enlargement is required a similar aisle on the south side will probably be added, which will bring up the accommodation to considerably over 1,000. The thirteenth century, in which style the chancel and its two aisles were added some time ago, has been adopted for the new aisle and vestry, the former of which will add 250 sittings, and Mr. Edwin Clark's tender has been accepted for the aisle. The walls will be plastered internally, the masonry outside corresponding with that of the chancel, and the roof will be of open timber, the flooring being of wood blocks and the seats of pitch pine, varnished.

CHURCH, NORWICH.—The foundation-stone has just been laid of the new Church of St. Mary Magdalene, an offspring of St. James's, Pockthorpe. The new church will occupy a site abutting on Silver-road, at a point just opposite Knowsley-road. The design of the new church has been prepared by Mr. A. J. Lacey, the architect. At present it is only intended to build the chancel and two bays of the nave, leaving out vestries. The walls will be built of brick and blue lias stone lime, faced externally with local flints and Monk's Park stone. The roof will be of pitch-pine, while the nave roof will be covered with Broseley tiles, and the aisles with Cumberland green slates. The walls internally will be stuccoed. The floors under the seating will be laid upon coke breeze concrete, the paths of the nave will be laid with encaustic tiles, and the chancel and sanctuary floors with similar tiles of a better quality. There will be an east window with five lights. A bell gable will be erected at the west end when the remaining bays of the nave are completed. The church when finished will accommodate 500 worshippers. The total cost of the erection will be about 5,500*l*. The builder is Mr. John Hearn.

SCHOOL, KINFAUNS, N.B.—On the 1st inst. the new school at Kinfauns was opened. The school has been built for one hundred pupils, the accommodation of the old school having proved insufficient. It is situated to the east of the former school, and the front extends about 50 ft. There are two classrooms—one an infant department—besides cloakrooms for boys and girls. In the playground are shelter sheds. The following is a list of the contractors:—Masons, Messrs. Fraser & Morton; joiners, Messrs. Stewart & MacFarlane; plumber, Mr. James M'Leish; slater, Mr. W. G. Ramsay; plasterers, Messrs. James Mackay & Sons; and painters, Messrs. Alexander Douglas & Sons (all of Perth). Mr. H. J. Bell, C.E., Perth, was the architect.

COUNCIL OFFICES, FARNHAM.—In our issue for the 6th inst. we gave a short description of new "Council Offices, Guildford." The new buildings are at Farnham and not Guildford.

RESTORATION OF WALTON CHURCH, LANCASHIRE.—Mr. Richard Calvert, J.P., has promised 5,000*l*. to the fund for the proposed restoration of Walton-le-Dale church. The architect for the restoration is Mr. Seddon, of London.

WORKMEN'S HALL, NEW ENGLAND.—The New England Workmen's Hall, the foundation-stones of which were laid last April, has now been completed. The building has been erected at a cost of about 3,000*l*., and it provides billiard and bagatelle room, smokeroom, reading-room, committee-room, a bar, bathroom, a large public hall with stage, dressing-room, gallery, &c. Mr. A. Ruddle was the architect, and Messrs. Sibley Brothers the builders.

METHODIST SCHOOL CHAPEL, GREAT HARWOOD.—The formal opening ceremony of the new Primitive Methodist school chapel in Orchard-street, Great Harwood, took place recently. The school has a frontage in Orchard-street, and is planned as a portion of a large scheme, the plan being arranged on the central hall principle. The main schoolroom is 53 ft. 6 in. by 28 ft., and on three sides of it are suites of classrooms, nine in number, of varying size. At the end opposite to the platform is a gallery, used for purposes of assembly. Each classroom is provided with an electric bell controlled by the superintendent from the platform. There is classroom accommodation for 300 scholars, and for assembly purposes 406 adults, or a mixed audience of 540. Special attention has been paid to sanitation, heating, and ventilation, and provision made in the basement for fuel, tea-making, &c. The wall on the principal front is faced with Yorkshire parpoints, the remaining external walls with semi-plaster bricks, and the structure roofed with Welsh slates. The work has been carried out from plans by and under the superintendence of Mr. John B. Thornley, architect, Darwen.

CO-OPERATIVE PREMISES, CHELMSFORD.—The Chelmsford Star Co-operative and Industrial Society, Ltd., has just opened new premises. The new buildings are situated in the rear of the Society's Central Stores, facing the Public Hall-road, and occupy the site of the old bakeries, flour store, stable, &c. The building has been carried out by Mr. Henry Potter, builder, of Chelmsford, at a cost of about 1,500*l*.; and the Co-operative Wholesale Society, of Broughton, Manchester, have executed the fittings at a cost of about 280*l*. Messrs. Charles & W. H. Pertwee, of Chelmsford, have acted as architects.

NEW CEMETERY CHAPEL, SCARBOROUGH.—A new cemetery chapel has been erected by the Scarborough Burial Board. The whole scheme, including chapel, caretaker's lodge, and stables, has cost 3,000*l*., Mr. F. A. Tugwell being the architect.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Messrs. Anthony Scott & Sons, architects, have removed their offices from Drogheda to 34 Lower Sackville-street, Dublin.

THE CHRISTMAS HOLIDAYS.—Next week the *Builder* will be published on Wednesday, the 24th inst., and to ensure attention all communications for the Editor must reach our office not later than Tuesday morning next.

LIVERPOOL HOUSING ASSOCIATION.—Under the auspices of the Liverpool Housing Association a lecture was delivered on the 11th inst. at Ullet-road Unitarian Church Lecture Hall, by Mr. Edmund Rathbone, the subject being "The City Beautiful." Mr. Rathbone said that the first step towards making a city beautiful was to arouse the desire for such a city in the public mind. The spirit of beauty which prevailed in the olden time, when beautiful cathedrals were erected, seemed to have passed away. The Bishop of Liverpool, however, appeared to think that this spirit could be revived, and he (the lecturer) hoped such would be the case. But he did not think that a beautiful city would be built unless a religious feeling permeated the hearts of the people. In Liverpool many buildings, in his opinion, were ruined by name plates and advertisements, and he hoped the Association would try and obtain the control of the placing of advertisements. The lecturer advocated the planting of trees in public streets, and thought the municipality should make street fittings artistic. It was disgraceful that the city should make money by letting out spaces on tramcars for advertising purposes. In order to complete St. George's Hall, he suggested that the merchants, shipowners, and tradesmen should subscribe for the erection of statues to be placed in the spaces already provided.

MEMORIAL TO QUEEN VICTORIA.—The memorial to Queen Victoria in St. Mildred's Church, Whippingham, Isle of Wight, is now approaching completion. It takes the form of a reredos with ornamental panels, and the decoration of the chancel generally. This work has been carried out from designs, and under the superintendence, of Mr. A. Nutt, the architect who designed the Coronation Annexe for Westminster Abbey. The distinctive feature of the reredos, which has been worked in alabaster, is a central panel depicting the Last Supper, all the figures in which are wrought of the purest white marble. On either side is a miniature panel, the one denoting the sacred emblems of the Bread and the other the Wine, represented by wheat ears in white marble, and a bunch of grapes, also in white marble. There are two larger panels representing the Alpha, with the words, "Holy, holy, Lord God Almighty," and the other the Omega, with the inscription, "Heaven and earth are full of Thy glory." The steps approaching the altar are of Belgian granite. A figure of the patron Saint of the Church of St. Mildred, in embossed stone, fills a niche at the side of the reredos, and on the corresponding side is a figure of St. Catherine. The effect in each case is enhanced by the introduction of tiny red marble shafts or pillars. On either side the new oaken roof above the sanctuary are figures of three angels representing the Heavenly host, produced in gilt and Oriental colouring, each bearing a scroll. A new stall, with oak tracery doors, has been placed opposite the Battenberg Memorial Chapel in the chancel.—*Standard*.

COURT OF COMMON COUNCIL.—At the meeting of the Court of Common Council on the 11th inst. the Streets Committee reported, in reference to the letter from the London County Council relative to the breaking up of streets in London by companies and others, that the Council had addressed a letter to the Home Secretary with a view to the appointment of a Select Committee of Parliament to hold an inquiry into the subject, and asking the Corporation to co-operate in impressing upon the Government the importance and urgency of the question. The Committee recommended that the request be complied with, on the understanding that the Council would take no action in the matter inconsistent with the Corporation retaining complete and absolute control over the streets in the City. The report was agreed to. The Court authorised the Billingsgate and Leadenhall Markets Committee to join with the London County Council in its scheme for the construction of a river embankment along property adjoining Shadwell Market (in connexion with the Rotherhithe and Ratcliffe Tunnel) by arranging for its extension along the entire front of the market, at an estimated cost of 15,000*l*. A report from the Improvements and Finance Committee submitting for acceptance a tender amounting to 14,078*l*. 17*s*. 6*d*. for constructing a subway in Lower Thames-street between Monument-street and Fish-street-hill, and for the necessary paving works in connexion with the widening of that thoroughfare, and recommending that it be referred to the Comptroller to complete accordingly, was carried. At the same time the Improvements Committee was asked to report on the subject of the widening of Newgate-street.

COMMONS AND FOOTPATHS PRESERVATION SOCIETY.—A meeting of the Executive Committee of the Commons and Footpaths Preservation Society was held on Thursday, the 11th inst., at 25, Victoria-street, Westminster, under the presidency of the Right Hon. G. Shaw Lefevre. The Secretary's Report upon private Bills to be introduced into Parliament during the ensuing Session was considered. Among the Metropolitan Open Spaces which will be interfered with by railway Bills are Back Common and Acton Green, Chiswick; Shepherd's Bush Green, Hammersmith; Peckham Rye Common and Tooting Bec Common. Over 11 acres of Tooting Bec Common are within the limits of deviation of the proposed London and Brighton Electric Express Railway. Several proposed tube railways will affect Hyde Park, St. James's Park and Green Park, and the Metropolitan District Railway seeks to acquire further land on the Victoria Embankment. It was further stated that 338 acres of common land in Yorkshire, Monmouth, Sussex, and Glamorgan would be acquired for purposes of water undertakings, and that the various Metropolitan Improvement Bills would involve the enclosure of portions of Wood Green Common, Eltham Common, and the Old Brydewell Burial Ground. It was resolved to communicate with 442 Local Authorities within whose area rights of way would be interfered with by railway companies, and the solicitor was directed to report upon various Bills which affect common land. Among other matters considered at the meeting were the proposed extension of Hampstead Heath, and the Hainault and Lambourne Open Space Scheme. It was stated that the Society had, since the last meeting of the Committee, secured the re-opening of twelve obstructed rights of way, and the restitution of a considerable area of common land.

A GOVERNMENT APPOINTMENT.—We hear that Mr. James Ransome, of Argyll-place, Regent-street, W., has been appointed Consulting Architect to the Government of India, and will shortly proceed to take up his duties in Calcutta. Mr. Ransome was elected an Associate of the Royal Institute of British Architects in 1893. He was the architect of "Burley Hill," in the New Forest, illustrated, together with two plans, in our issue of October 21, 1899, and has planned and designed many houses at Leicester, Marlborough, Aldeburgh, and elsewhere in the provinces. Of his work in the neighbourhood of London we may instance houses on the Wimbledon Park estate, at Roehampton, and in Marryat-road, Church-road, and Burghley-road, Wimbledon.

A CANAL FROM LONDON TO SOUTHAMPTON.—Under the scheme for constructing a canal from London to Southampton, it is proposed to reinstate and utilise the old canal which was originally made in the reigns of Kings Richard I. and John between Winchester and Woodmill, about 2½ miles above the ferry across the Itchen at Southampton. The canal was made by Godfrey, Bishop of Winchester, who embanked the Itchen at Old Alresford, and was restored by the citizens of Winchester, *temp.* Charles II.

WINDOW, SANDHURST COLLEGE CHAPEL.—A stained-glass window has just been unveiled and dedicated at Sandhurst College chapel, in memory of Lieut. R. H. C. Coë. The window was designed and executed by Messrs. Joseph Bell & Son, Bristol.

PROPOSED RAILWAYS TO BRIGHTON AND DOVER.—Messrs. F. H. Behr and Mr. R. Elliott-Cooper are appointed engineers of two proposed lines, to be constructed on the mono-rail principle, from a common terminus in the Strand to the Bedford Hotel, Brighton, and to Dover via Chatham, the lines being carried in a tube beneath the Thames and thence along a viaduct to their point of divergence at Clapham Park. It is calculated that the journey of 59¼ miles to Brighton will be accom-

plished in twenty-five minutes, and that to Dover in forty minutes. Messrs. Behr and Elliott-Cooper are engineers to the Manchester and Liverpool Electric Railway, for which an Act was obtained in 1901, and of which the Warrington section will, it is expected, be completed in six months' time.

CEMENT GRINDING.—We have received a circular from Messrs. Kaye & Co., of Rugby, who were the pioneers of the Warwickshire cement industry in 1854, calling attention to the improved grinding machinery recently laid down in their works. The Warwickshire lias deposits are said to be particularly suitable for the manufacture of Portland cement, as all the necessary ingredients are present in the raw material in an extremely fine state of division. As a drawback to this natural advantage, the clinker is so exceptionally hard and tough that its reduction to fine powder has always been difficult. Messrs. Kaye & Co. state that they have successfully solved the problem by the aid of their new grinding plant, and announce that for the future their ordinary grade of cement will leave less than 10 per cent. residue in a 76-mesh sieve. The proportion of residue previously left in this sieve was upwards of 20 per cent. This increased fineness is clearly desirable, as it will considerably enhance the value of the cement.

SITES FOR NEW BOARD SCHOOLS, LONDON.—The School Board for London have just issued their annual schedule of the fresh sites in respect of which they will apply for a Provisional Order for the erection of new Board schools or the enlargement or improvement of existing school houses and buildings. The total number of sites scheduled is sixty-five, but inasmuch as there are three pairs of alternative sites the actual number to be acquired is sixty-two. Taking the mean of each pair of alternative sites, we find that the aggregate area of the gross number of sites amounts to 20 a. 2 r. 28 p. The fresh sites are distributed amongst the divisional districts as follows:—*Westminster.*—On the northern side of Drury-lane, near Kemble-street (one). *Tower Hamlets.*—Poplar—Gardens of five houses in St. Leonard-street and fronting Imperial-street; 24, Monteith-road; and land and factory premises in Cheval-street, Millwall; Stepney—Nineteen houses in Walden and Varden streets and some adjoining school buildings; 537, Commercial-road East, and garden ground; eight houses in Northey-street; garden ground in Dalgleish-street; land on the east side of Rowton Houses, Fieldgate-street; six houses in Brook-street, Ratcliff; six in Cottage-grove, or ten in St. Peter's-road; six in Fordham-street; twelve in Finch-street and Osborn-place; and land fronting the junction of Ocean-street and Ben Jonson-road, Trafalgar-square (fourteen). *Marylebone.*—Twelve houses and land in their rear, New End and Streatley-place, Hampstead; 7 and 8, Clifton-villas; 25, Lupton-street; and three houses in Tonbridge-street, St. Pancras (four). *West Lambeth.*—Wandsworth—One of two vacant plots in Franciscan-road; houses in Stratford-grove, Putney; Shandon-road, and New Park-road, and vacant lands in Greyhound, Burntwood, and Garratt lanes; Lambeth—nine houses in Langley-lane, with land, &c., in the rear; 1-7, Priory-grove; 46, Acre-lane; lands at Denmark Hill and Gipsy-road, and either nine houses in Hackford-road, with the recreation ground at their rear, or twelve in that road and Russell-street (fifteen). *East Lambeth.*—3-5, Grosvenor-street, Boundary-lane, Southwark (one). *Hackney.*—Shoreditch: five houses, yards, &c., in Ormsby-street; eleven in Wenlock and Herbert streets; three in Gloucester-row; seventeen in Minterm-street and eighteen in Nicholas-street, and twenty-one in Nichols'-square; 51, Oswald-street, Hackney; 226 and 228, High-street, Stoke Newington; eight houses in Chatsworth and Rushmore-roads, Bethnal Green; eight in Havelock-place, with land, &c., at the rear, seven in Lyte-street, and seven in Vivian-road, Hackney (eleven). *Greenwich.*—Land having frontages to McLeod and Basildon roads; 95, Conway-road; and 26 and 28, Woolwich-road, Maryon Park, with land adjoining; Deptford—28 to 34 (even), Mornington-road, and part of the gardens of four houses in that road; and one of two sites in Avignon-road on either side of the Shortlands and Nunhead railway line; Greenwich—50, Halstow-road; 2, Albion-hill; 65, Knott-street; and vacant land in Randall-place (ten). *Finsbury.*—Seven houses in Collier-street, Winchester-street; Islington—6, Richard-street; 52-4, Halliford-street; 40, Romilly-road: eleven houses with garden ground in Hanley and Grenville roads, and twenty in Tollington and Shelburne roads (six). *Chelsea.*—Four houses in Rabbit-row, the Mall, Kensington, with adjoining yards and other premises; 38 and 40, Lime-grove; and eight houses in Uxbridge-road, with some works and sheds facing Bulwer-street, Shepherd's Bush (three).

DISCOVERIES AT ALPHAMSTONE CHURCH, ESSEX.—During the progress of some restorations at Alphamstone Church, Essex, some interesting discoveries have been made. When the old plaster was scraped off, one of the chancel walls was found to be built, not of flint like the others, but of red bricks, with here and there white stones of varying shapes and sizes. One of these being extracted, it was found, although somewhat damaged, to be beautifully moulded on the inner side. Large numbers of similar stones have been removed, and the work is still in actual progress. Practically all of the stones which originally formed the *sedilia* have been recovered, besides numbers of others which form portions of the tracery of what was apparently a fine window. Five small inscriptions have been found on these stones which, it is hoped, may be deciphered. Alphamstone Church is of great antiquity, and is of especial interest apart from these discoveries. It has an unusually fine chancel arch, which until the present work was begun was entirely covered with plaster. The font, which is believed to be 700 years old, was likewise plastered. —*Standard.*

THE "VIA EASTERN" TELEGRAPHIC CODE.—We have received a copy of the book containing this code, compiled by Mr. R. T. Atkinson, and issued under the authorisation of the Eastern Telegraph Co. It is exceedingly full and varied in its possibilities of expression. The code words are formed on the basis of taking Latin words or Latinised forms of words and making groups of variations on them. Both subjects and code words are arranged in alphabetical order in parallel columns so that the code words wanted can be found at a glance.

LANCASHIRE, CHESHIRE, AND NORTH WALES BUILDING TRADES EMPLOYERS' FEDERATION.—The half-yearly meeting of this Federation was held recently at the Mosley Hotel, Piccadilly, Manchester, when Mr. George Macfarlane (of Manchester), the President of the Federation, was in the chair, and there were present Messrs. S. Smethurst (Oldham), H. Lever, A. G. White, and W. Tomkinson (Liverpool), T. H. Kellett (Preston), James Storrs (Stalybridge), and about fifty other representatives from the chief towns of Lancashire and Cheshire. The Chairman congratulated the Society on its continued success, and hoped that no effort would be spared to strengthen and extend its influence. They had a membership at present of nearly 2,000, but he hoped that measures which were down for their consideration would have the result of nearly doubling their numbers, and thus forming one of the strongest building trades employers' organisations in the country.

ARCHÆOLOGICAL DISCOVERY.—Mr. William Le Qaeux, who is making excavations of Roman remains at Castor, Northamptonshire, on Saturday last week discovered in a field, close to the remains of the ancient Ermine-street, the floor and boundary walls of a temple. The floor is 40 ft. long by 20 ft. wide, tessellated in a design of white and red, and is in perfect preservation. Quantities of red fresco have been dug out, together with bones, ashes, Roman pottery and glass. In the centre of the floor is a large pear-shaped hollow, about 2 ft. deep and 10 ft. wide, in the middle of which are remains of the base of the altar.

GRANITE TRADE, ABERDEEN.—The granite trade of Aberdeenshire reveals a slightly increased activity as compared with the previous year. The output from the quarries has been slightly over that of 1901. Big works, however, are in prospect, and the extension of the Marischal College buildings and the erection of the Post Office promise to keep the quarry masters busy. In the monumental branch business has been brisker than in the former year, though it has now commenced to fall off with the past month. Again, a scarcity of local granite has been experienced, owing to the pressure on the resources of the quarries. The building branch of the trade has been similarly prosperous. The importations of foreign granite amounted in all to 16,280 tons, or 4,327 tons less than in 1901; but this is attributed to the large stock on hand at the close of that year.

ROYAL ACADEMY PRIZE DESIGNS.—We find that we made an error in attributing the prize design for a plan of a formal garden to Mr. A. W. Blomfield; this prize was awarded to Mr. G. Thow Smith.

HISTORIC GLOUCESTERSHIRE CHURCH COLLAPSES.—A large portion of the historic parish church of Avening, near Stroud, collapsed with a terrific crash recently. The church is one of the oldest in the kingdom, and the Norman portion is the most complete of its kind in any part of the country. Recently the state of the edifice has created some anxiety, and after consulting competent architects the officials decided to carry out a scheme of repair which is now in progress. The part which has collapsed is the west end, and fortunately is of a more modern character than the other portion, which has luckily been preserved. No one was injured by the falling debris, but several workmen had narrow escapes. Some parts of the church date back even prior to Norman times, and every effort is being made to retain these interesting features.—*Birmingham Gazette.*

BUILDING COLLAPSE AT SHEFFIELD.—More than one old building in Sheffield has failed to stand the stress of time, and has collapsed recently, and on the 13th inst. the West End Hotel, which stood some little distance back from Glossop-road, was almost entirely wrecked. Fortunately, the collapse was gradual, and the final fall was anticipated, so that to the damage to property no personal casualty has to be added. The building may be said to have fallen in sections, a portion giving way in the afternoon, and leaving other parts so manifestly dangerous that the landlord and his family were persuaded to leave the premises some hours before the final collapse took place. The owners of the hotel have been carrying out extensive alterations, the main idea being to bring forward the front of the building some 12 ft. or 14 ft. It was on the lower side of the house that the first collapse took place, and at a point where excavations had been made to a depth below the original foundations of the frontage wall. About half-past three in the afternoon, without any warning, the wall of the cellar fell in with a loud crash. The men employed on the work had a narrow escape, for they had left the spot where the fall occurred only a moment or two before. Steps were at once taken to prevent a further collapse, but at various intervals there were ominous cracks, and early on Saturday morning the building fell with a tremendous crash, the whole place being literally wrecked.—*Birmingham Post.*

SUNDERLAND BUILDING TRADES ASSOCIATION.—Speaking at the annual dinner of the Sunderland and District Building Trades Association, the President (Mr. J. B. Stott) alluded to the state of affairs that existed in the trade some years ago when, owing to the fact that the masters were sitting still, the men generally got all they asked for. He recalled the time when some of the employers met to consider an application for an advance from the men, who thought they were behaving generously in not asking for more. The master builders had been compelled to put their organisation on efficient lines as a result of the rapacious greed of the employees. With regard to the subject of disputes generally, he urged that, when a settlement could be arrived at by conciliation, they should not go to war, for this made both sides suffer. Dealing with the present outlook, he said the time had come when workmen should see that inflated wages could not be kept up on a falling market, for unless they saw that they would be simply locking the door on the building trade. A man must be blind who could not see that they were going to have depression in their trade as well as in other branches, and the masters and men would have to meet to consider the matter. He thought the time was coming nearer and nearer when they would have to tackle the question, and he expressed a hope that they would do it in a conciliatory spirit.

EDINBURGH AND LEITH MASTER BUILDERS' ASSOCIATION.—The annual dinner in connexion with the Edinburgh and Leith Master Builders' Association took place on the 11th inst. in the Royal British Hotel, Princes-street, Edinburgh. About 130 gentlemen were present. Mr. Robert Lamb, President of the Association, occupied the chair, and Messrs. Knox and M'Leod and Councillor Forrest acted as croupiers. The loyal and patriotic toasts having been honoured, Mr. James Millar proposed "The Lord Provost, Magistrates, and Town Councils of Edinburgh and Leith." He suggested that the Corporation might undertake the erection of working-class houses, and thus do something to relieve the distress in the building trades. His opinion was that no private individual could build houses for that class of people under the present conditions of the building rules. He also suggested that on inquiries into the housing question evidence should be taken from builders, architects, or house factors, as well as from other experts.—Bailie Bryson, who acknowledged the toast, said he was opposed to Corporations taxing one class of the population for the housing of another class. Councillor Dobie, who also replied to the toast, said, in regard to Mr. Millar's remarks as to the building of working-class houses, it was matter for consideration whether the proposed cheap electrical transit to the districts surrounding the city might not materially assist the erection of cheap working-class houses. If the proposed electrical tramways were laid, some experiment might be made in the housing question. —Mr. A. Hunter Crawford proposed "The Edinburgh and Leith Master Builders' Association." Speaking of the Dean of Guild Court regulations, he said he would like to hearten the civic authorities in their efforts to get good work put up in Edinburgh. The excellent quality of the building work in Edinburgh had been largely helped by the building regulations. Under these regulations there was in Edinburgh greater freedom in carrying out work than was to be found in other cities. Convener Barton replied. Mr. James Hall proposed "The Scottish Building Trades Federation." He thought there was no present necessity for working men's houses. There were 2,581 empty houses in Edinburgh this year, or 330 more than were empty last year. Did that show that more houses were wanted for the poor people? There were empty houses with rents as low as 6*l.*, and there were 1,100 empty houses rented at between 10*l.* and 12*l.* In the West Port and Tron-square the Corporation had built houses, the tenants in which had come complaining to him that they would not stay in them—they were so cold. If the bricks had been pressed, it would not have been so bad, but they were bricks with irregularities that crows could build their nests in. Councillor Forrest, who replied, agreed with Mr. Hall that the demand for workmen's houses was not so great as some people would like to make out. He remarked that the Building Trades Federation had not been taken up so enthusiastically as was to be desired, and he urged that everybody connected with the building trade should come into the combination.—Lord Dean of Guild Bruce proposed "The Architects and Surveyors." He said that the Scottish style of building impressed one too

much with its stability and solidity. That was all very well in its way, but he would like to see less of solidity and more of beauty in their elevations. The architects who most succeeded in that respect were sure to be the most successful in their profession. Speaking of Princes-street, he said that the height of the buildings in that street formed one of its attractions, and he hoped that where buildings there required to be heightened it would be done at no distant date. In regard to the Usher Hall—the site for which he thought was the best possible—he trusted that the Town Council would arrange for competitive plans being asked for, so that rising architects might have an opportunity of sending in plans. Mr. Lorne Campbell, in reply, said that architects had not in every case made the best of their opportunities in regard to the æsthetics of the buildings they designed. The Dean of Guild Court had no control over that matter, and he did not know that it would be wise to give the court that control. Most of the architects of Edinburgh were at one with the Lord Dean of Guild as to the propriety of asking competitive plans for the Usher Hall. He thought it would be a slight to the architects of Edinburgh if the designing of the Usher Hall were kept in a city department. A public-spirited man like Mr. Usher would have desired that his scheme should have been carried out in a public-spirited way, and the only way of doing that was to give all the architects of Edinburgh, or the whole of the architects of the kingdom if they liked, a chance of preparing plans for the hall. Edinburgh had a very unenviable reputation in regard to such competitions. On several occasions premiums had been paid for designs, and the work had not been proceeded with. The building of the Usher Hall provided an opportunity for Edinburgh redeeming itself in the eyes of architects. Mr. A. K. Smith replied for the surveyors. Other toasts followed.

THE RIVER LEA.—The Rivers Committee of the London County Council reported as follows at Tuesday's meeting:—"We have had our attention directed to a Report by the Engineer of the Lea Conservancy, dated November 28, 1902, which contains some interesting figures showing the reduction in the quantity of water in the River Lea and its tributaries. It appears from gaugings taken at Fields's Weir, between the intakes of the New River and East London Water Companies, that the mean daily flow for the month of October last was 10½ million gallons; the mean daily flow for the first ten months of 1902 was 20½ million gallons; the mean daily flow for the first ten months of each year for the past twenty years (1882-1901) was 82¼ million gallons. The Report also states that the river bed was found to be dry above Church-street, Luton, and that the bed of the tributary Mimram was entirely dry above Kimpton Mill, and that there was only a small pool below the same. The bed of the tributary Reb was also dry at Westmill, and that of the Beane at Frogmore Park. The Report of the Water Examiner for October, 1902, shows that the average daily quantity of water abstracted during that month by the New River Company from the River Lea above Fields's Weir was 16,805,499 gallons, while the average daily quantity taken by the East London Water Company from below the weir and from storage was 6,721,139 gallons. No particulars are given as to what proportion of the 6,721,139 gallons was taken from storage, but there seems to be no doubt that, except for a small quantity required for navigation purposes, the Water Companies abstracted all the water of the River Lea during the month in question."

NEW ALTAR, ST. PATRICK'S R.C. CHURCH, COATBRIDGE, GLASGOW.—The new altar erected at St. Patrick's, Coatbridge, to the memory of the late Canon O'Keefe has just been dedicated. The design is by Messrs. Pugin & Pugin, London.

WATER SUPPLY, FYLDE.—A Local Government Board inquiry was held at the Blackpool Town Hall on the 3rd inst. by Mr. W. O. E. Meade-King, M.Inst.C.E., into the application of the Fylde Water Board to borrow 159,407*l.* for the construction of a new reservoir to hold 332 million gallons of water at Grizedale Lea, Burnace-with-Bonds. Mr. T. Loftus, clerk to the Fylde Water Board, said that 137,727*l.* was required for the new reservoir, 20,000*l.* for the general extension of the water main, and 1,680*l.* for miscellaneous work. The proposed term of the loan would be sixty years. Mr. Waring said the site was close to the other reservoirs, convenient to the present works, and near to the main pipe leading from the intake at Calder Vale. The plans were explained by Mr. Waring.

LEGAL.

BRICKLAYER'S CLAIM UNDER THE WORKMEN'S COMPENSATION ACT.

THE case of Harrison *v.* Guthrie & Son came before the Court of Appeal composed of the Master of the Rolls and Lords Justices Romer and Mathew on the 12th inst. on the appeal of the defendants from a decision of the County Court Judge of Durham, sitting at Darlington, awarding the plaintiff 15*s.* a week compensation under the provisions of the Workmen's Compensation Act, 1897, in respect of personal injuries sustained while in the defendant's employment.

Mr. Shortt appeared for the appellants; and Mr. Ruegg, K.C., and Mr. Chester-Jones for the respondent.

Mr. Shortt said that the plaintiff was a bricklayer employed by the defendants, who were a firm of contractors executing a contract for the building of a new wing on to a dwelling-house. There were a vinery and outhouses which were physically attached to the main building. There was also a garden wall, at the end of which was an engine-house, and some 60 yards distant from that engine-house there was a cesspool into which the premises were drained. On the day the accident occurred there was a heap of bricks laying close by the cesspool and which were being used in repairing the cesspool. The plaintiff, who almost immediately before had been employed in the vinery, went to the heap of bricks, and while in the act of "chipping" one of the bricks a piece of grit went into his eye. This occurred on November 21, 1901, and on November 23 he went to the hospital, where his eye was operated upon, the doctor stating that the piece of grit had caused an abscess to form.

The Master of the Rolls hoped that the plaintiff had not lost the use of his eye.

Mr. Shortt replied that he was sorry to say that he had, and there was also a risk of the other eye being affected in consequence of the accident.

Mr. Ruegg stated that the man's other eye had actually become affected.

Mr. Shortt said that the learned County Court Judge held as a fact that the working on this cesspool was working "on, in, or about" a building over 30 ft. high where a scaffolding was being used. It was not open for him (Counsel) to suggest that the main building did not come within the description of a building over 30 ft. high, and undoubtedly scaffolding was being used on the new wing and also in connexion with one of the chimneys, but his submission was that the plaintiff being at work and engaged at the cesspool at the time of the accident, he was not working upon the main building, and therefore the accident did not happen "on, in, or about" the main building.

Lord Justice Romer said he supposed that the cesspool was connected by means of drains with the house?

Mr. Shortt said that that was so. His submission, however, was that that fact did not render the cesspool a part of the main building.

The Master of the Rolls, without calling upon counsel for the respondent, in giving judgment, said that this court could not interfere with the findings of fact of the learned County Court Judge. Mr. Shortt could only succeed by establishing that there was no evidence on which the learned County Court Judge could find that the injured man was working "on, in, or about" a building over 30 ft. high. The question was whether the cesspool was a part of the house which was being repaired by means of scaffolding. It undoubtedly was an essential part of the house, and was physically connected by a drain with the house. That being so, he thought there was ample evidence on which the learned County Court Judge could come to the conclusion he did, and therefore the appeal must be dismissed with costs.

The Lords Justices concurred.

TRADE LIBEL CASE SETTLED IN CHANCERY DIVISION.

MR. JUSTICE KEKEWICH, in the Chancery Division, on the 11th inst., concluding the hearing of the case of Alcott *v.* Lefroy, an action by the plaintiff, a manufacturer of red-gum paving-blocks, used for paving purposes, against the defendant, the Agent-General for West Australia, for an injunction and damages in respect of an alleged libel contained in a Report prepared by a Mr. Herbert Stone to the effect that the blocks of red gum then being laid in Whitehall, and supplied by the plaintiff, were unsatisfactory. The defendant printed and published the Report in the autumn of 1901. The Report stated (*inter alia*) that the blocks being used at Whitehall were not of the same quality as those used in the experimental strips: that whatever durability the best of the mature wood might possess when sound and properly seasoned, it was of no value in the condition in which it was supplied at Whitehall; that as the mature sample supplied by the plaintiff showed the liability of the wood to the attacks of vegetable parasites, the wet and sappy wood must be liable to a much greater degree; and that the blocks laid would open in a great number of cracks when exposed to the sun in the same way as those at the back of the statue in Waterloo-place, and that each crack would admit moisture and become a focus of decay. The defendant pleaded a denial that the words complained of were defamatory, and alleged that they were fair comment on a matter of public interest. Defendant further pleaded that the words complained of were true in substance and in fact, and that the same were published by him pursuant to his duty as Agent-General for West Australia to protect the commercial interests of West Australia.

Mr. Warrington, K.C., Mr. Foote, K.C., and Mr. George Cave appeared for the plaintiff; and Dr. Blake Odgers, K.C., Mr. Stewart Smith, K.C., and Mr. G. Lawrence for the defendant.

In the result the action was settled on terms as stated.

Dr. Blake Odgers, on behalf of the defendant, stated that his client was not interested in any wood paving firm or company, and that he employed Mr. Herbert Stone to make the report in perfect good faith. He now discovered that the statements in that report could not be substantiated, and he regretted having published them.

Mr. Warrington said that the plaintiff had suffered a considerable amount of injury from the statements made in the report, but after his learned friend's expression of regret on behalf of the defendant he had no desire to pursue the matter vindictively. There would accordingly be judgment upon the terms arranged.

His lordship thought the case had been settled in a very satisfactory manner.

THE LEYTON VIBRATION CASE.

THE case of Hawkes *v.* the Leyton Urban District Council came up before Mr. Justice Buckley in the Chancery Division on the 12th inst. on a motion by the defendants that an order made by his lordship on April 30 last year whereby a writ of sequestration was directed to issue against the defendant Council might be discharged, or, alternatively, that the operation of the order might be directed to be stayed until further order.

Mr. H. Terrell, K.C., in support of the application, said that in February, 1900, his lordship gave judgment against the Council, restraining them, their servants and agents, from causing a nuisance by employing gas-engines in connexion with their electric-supply works at Leyton. That order had been stayed until December 17 of this year on the defendants undertaking to make certain alterations and to cease altogether to use their gas plant. This had been done. Steam-engines had now been substituted for the gas-engines, and the gas-engines had not been worked since.

Council on behalf of the plaintiff said he understood the defendants' gas plant had been entirely disconnected and would never be used again. Under these circumstances he did not oppose the application provided the plaintiff's costs as between solicitor and client were paid by the defendants.

His lordship accordingly discharged the order and directed the defendants to pay the costs.

ACTION AGAINST ARCHITECTS FOR GOODS SOLD.

THE case of Gardner *v.* Wimperis and Arber came before Mr. Justice Wright, sitting without a jury, in the King's Bench Division on the 11th inst. It was an action by the plaintiff, who carried on business as Starkie Gardner & Co., metal workers, to recover from the defendants, a firm of architects, of London, the sum of 450*l.* for goods supplied.

Mr. Ernest Pollock appeared for the plaintiff; and Mr. Witt, K.C., and Mr. Dennis for the defendants.

It appeared that Mr. Arber was the architect for the erection of the New Palace Theatre at Plymouth. During the course of the work it was found necessary to erect a porch or portico, which involved a certain amount of metal work, and in consequence of a letter sent by the defendants to the plaintiff a verbal contract was entered into whereby the plaintiff agreed to supply the metal work. This he did, and sought to recover the amount from the defendants.

The defence set up was that the defendants were only the architects for the building of the theatre, and that plaintiff knew there was an undisclosed principal to whom he was to look for payment.

Mr. Arber, the defendant, was called, and stated that the theatre cost 60,000*l.* He did not issue a certificate to the plaintiff as early as he might, but he wrote plaintiff that his account had gone forward to the proprietor, with a view to its being paid.

His lordship in giving judgment wished he could assist the plaintiff, but he could not. It was said that this work was done under a contract, and that defendants should pay. No question of custom had been suggested, and there was no writing in the case. The sole question was whether it was the intention of the parties that there should be a contract between them. In answering that question he went by the plaintiff's evidence alone. He did not pay any attention to defendant's evidence. But on plaintiff's evidence alone it did not look at all as if there was any intention that the defendants should do anything but act as architects on behalf of somebody. It was plaintiff's business to inquire the name of the buyer if he wanted to know it. He could not help thinking that it was not the intention of the parties that Mr. Arber should be personally liable. He did not think it was. That being so, he did not see how the action could possibly succeed. He dismissed the action, but did not feel inclined to give defendants any costs.

ACTION FOR BREACHES OF A COVENANT IN A LEASE.

MR. JUSTICE LAWRANCE and a special jury had before them the case of Lord Howard de Walden *v.* Brutton on the 12th inst., an action by the plaintiff to recover possession of Nos. 29 and 30

plished in twenty-five minutes, and that to Dover in forty minutes. Messrs. Behr and Elliott-Cooper are engineers to the Manchester and Liverpool Electric Railway, for which an Act was obtained in 1901, and of which the Warrington section will, it is expected, be completed in six months' time.

CEMENT GRINDING.—We have received a circular from Messrs. Kaye & Co., of Rugby, who were the pioneers of the Warwickshire cement industry in 1854, calling attention to the improved grinding machinery recently laid down in their works. The Warwickshire lias deposits are said to be particularly suitable for the manufacture of Portland cement, as all the necessary ingredients are present in the raw material in an extremely fine state of division. As a drawback to this natural advantage, the clinker is so exceptionally hard and tough that its reduction to fine powder has always been difficult. Messrs. Kaye & Co. state that they have successfully solved the problem by the aid of their new grinding plant, and announce that for the future their ordinary grade of cement will leave less than 10 per cent. residue in a 76-mesh sieve. The proportion of residue previously left in this sieve was upwards of 20 per cent. This increased fineness is clearly desirable, as it will considerably enhance the value of the cement.

SITES FOR NEW BOARD SCHOOLS, LONDON.—The School Board for London have just issued their annual schedule of the fresh sites in respect of which they will apply for a Provisional Order for the erection of new Board schools or the enlargement or improvement of existing school houses and buildings. The total number of sites scheduled is sixty-five, but inasmuch as there are three pairs of alternative sites the actual number to be acquired is sixty-two. Taking the mean of each pair of alternative sites, we find that the aggregate area of the gross number of sites amounts to 20 a. 2 r. 28 p. The fresh sites are distributed amongst the divisional districts as follows:—*Westminster.*—On the northern side of Drury-lane, near Kemble-street (one). *Tower Hamlets.*—Poplar—Gardens of five houses in St. Leonard-street and fronting Imperial-street; 24, Monteith-road; and land and factory premises in Cheval-street, Millwall; Stepney—Nineteen houses in Walden and Varden streets and some adjoining school buildings; 537, Commercial-road East, and garden ground; eight houses in Northey-street; garden ground in Dalgleish-street; land on the east side of Rowton Houses, Fieldgate-street; six houses in Brook-street, Ratcliff; six in Cottage-grove, or ten in St. Peter's-road; six in Fordham-street; twelve in Finch-street and Osborn-place; and land fronting the junction of Ocean-street and Ben Jonson-road, Trafalgar-square (fourteen). *Marylebone.*—Twelve houses and land in their rear, New End and Streatley-place, Hampstead; 7 and 8, Clifton-villas; 25, Lupton-street; and three houses in Tonbridge-street, St. Pancras (four). *West Lambeth.*—Wandsworth—One of two vacant plots in Franciscan-road; houses in Stratford-grove, Putney; Shandon-road, and New Park-road, and vacant lands in Greyhound, Burntwood, and Garratt lanes; Lambeth—nine houses in Langley-lane, with land, &c., in the rear; 1-7, Priory-grove; 46, Acre-lane; lands at Denmark Hill and Gipsy-road, and either nine houses in Hackford-road, with the recreation ground at their rear, or twelve in that road and Russell-street (fifteen). *East Lambeth.*—3-5, Grosvenor-street, Boundary-lane, Southwark (one). *Hackney.*—Shoreditch: five houses, yards, &c., in Ormsby-street; eleven in Wenlock and Herbert streets; three in Gloucester-row; seventeen in Minterne-street and eighteen in Nicholas-street, and twenty-one in Nichols'-square; 51, Oswald-street, Hackney; 226 and 228, High-street, Stoke Newington; eight houses in Chatsworth and Rushmore-roads, Bethnal Green; eight in Havelock-place, with land, &c., at the rear, seven in Lyte-street, and seven in Vivian-road, Hackney (eleven). *Greenwich.*—Land having frontages to McLeod and Basildon roads; 95, Conway-road; and 26 and 28, Woolwich-road, Maryon Park, with land adjoining; Deptford—28 to 34 (even), Mornington-road, and part of the gardens of four houses in that road; and one of two sites in Avignon-road on either side of the Shortlands and Nunhead railway line; Greenwich—50, Halstow-road; 2, Albion-hill; 65, Knott-street; and vacant land in Randall-place (ten). *Finsbury.*—Seven houses in Collier-street, Winchester-street; Islington—6, Richard-street; 52-4, Halliford-street; 40, Romilly-road: eleven houses with garden ground in Hanley and Grenville roads, and twenty in Tollington and Shelburne roads (six). *Chelsea.*—Four houses in Rabbit-row, the Mall, Kensington, with adjoining yards and other premises; 38 and 40, Lime-grove; and eight houses in Uxbridge-road, with some works and sheds facing Bulwer-street, Shepherd's Bush (three).

DISCOVERIES AT ALPHAMSTONE CHURCH, ESSEX.—During the progress of some restorations at Alphamstone Church, Essex, some interesting discoveries have been made. When the old plaster was scraped off, one of the chancel walls was found to be built, not of flint like the others, but of red bricks, with here and there white stones of varying shapes and sizes. One of these being extracted, it was found, although somewhat damaged, to be beautifully moulded on the inner side. Large numbers of similar stones have been removed, and the work is still in actual progress. Practically all of the stones which originally formed the *sedilia* have been recovered, besides numbers of others which form portions of the tracery of what was apparently a fine window. Five small inscriptions have been found on these stones which, it is hoped, may be deciphered. Alphamstone Church is of great antiquity, and is of especial interest apart from these discoveries. It has an unusually fine chancel arch, which until the present work was begun was entirely covered with plaster. The font, which is believed to be 700 years old, was likewise plastered.—*Standard.*

THE "VIA EASTERN" TELEGRAPHIC CODE.—We have received a copy of the book containing this code, compiled by Mr. R. T. Atkinson, and issued under the authorisation of the Eastern Telegraph Co. It is exceedingly full and varied in its possibilities of expression. The code words are formed on the basis of taking Latin words or Latinised forms of words and making groups of variations on them. Both subjects and code words are arranged in alphabetical order in parallel columns so that the code words wanted can be found at a glance.

LANCASHIRE, CHESHIRE, AND NORTH WALES BUILDING TRADES EMPLOYERS' FEDERATION.—The half-yearly meeting of this Federation was held recently at the Mosley Hotel, Piccadilly, Manchester, when Mr. George Macfarlane (of Manchester), the President of the Federation, was in the chair, and there were present Messrs. S. Smethurst (Oldham), H. Lever, A. G. White, and W. Tomkinson (Liverpool), T. H. Kellett (Preston), James Storrs (Stalybridge), and about fifty other representatives from the chief towns of Lancashire and Cheshire. The Chairman congratulated the Society on its continued success, and hoped that no effort would be spared to strengthen and extend its influence. They had a membership at present of nearly 2,000, but he hoped that measures which were down for their consideration would have the result of nearly doubling their numbers, and thus forming one of the strongest building trades employers' organisations in the country.

ARCHÆOLOGICAL DISCOVERY.—Mr. William Le Queux, who is making excavations of Roman remains at Castor, Northamptonshire, on Saturday last week discovered in a field, close to the remains of the ancient Ermine-street, the floor and boundary walls of a temple. The floor is 40 ft. long by 20 ft. wide, tessellated in a design of white and red, and is in perfect preservation. Quantities of red fresco have been dug out, together with bones, ashes, Roman pottery and glass. In the centre of the floor is a large pear-shaped hollow, about 2 ft. deep and 10 ft. wide, in the middle of which are remains of the base of the altar.

GRANITE TRADE, ABERDEEN.—The granite trade of Aberdeenshire reveals a slightly increased activity as compared with the previous year. The output from the quarries has been slightly over that of 1901. Big works, however, are in prospect, and the extension of the Marischal College buildings and the erection of the Post Office promise to keep the quarry masters busy. In the monumental branch business has been brisker than in the former year, though it has now commenced to fall off with the past month. Again, a scarcity of local granite has been experienced, owing to the pressure on the resources of the quarries. The building branch of the trade has been similarly prosperous. The importations of foreign granite amounted in all to 16,280 tons, or 4,327 tons less than in 1901; but this is attributed to the large stock on hand at the close of that year.

ROYAL ACADEMY PRIZE DESIGNS.—We find that we made an error in attributing the prize design for a plan of a formal garden to Mr. A. W. Blomfield; this prize was awarded to Mr. G. Thow Smith.

HISTORIC GLOUCESTERSHIRE CHURCH COLLAPSES.—A large portion of the historic parish church of Avening, near Stroud, collapsed with a terrific crash recently. The church is one of the oldest in the kingdom, and the Norman portion is the most complete of its kind in any part of the country. Recently the state of the edifice has created some anxiety, and after consulting competent architects the officials decided to carry out a scheme of repair which is now in progress. The part which has collapsed is the west end, and fortunately is of a more modern character than the other portion, which has luckily been preserved. No one was injured by the falling debris, but several workmen had narrow escapes. Some parts of the church date back even prior to Norman times, and every effort is being made to retain these interesting features.—*Birmingham Gazette.*

BUILDING COLLAPSE AT SHEFFIELD.—More than one old building in Sheffield has failed to stand the stress of time, and has collapsed recently, and on the 13th inst. the West End Hotel, which stood some little distance back from Glossop-road, was almost entirely wrecked. Fortunately, the collapse was gradual, and the final fall was anticipated, so that to the damage to property no personal casualty has to be added. The building may be said to have fallen in sections, a portion giving way in the afternoon, and leaving other parts so manifestly dangerous that the landlord and his family were persuaded to leave the premises some hours before the final collapse took place. The owners of the hotel have been carrying out extensive alterations, the main idea being to bring forward the front of the building some 12 ft. or 14 ft. It was on the lower side of the house that the first collapse took place, and at a point where excavations had been made to a depth below the original foundations of the frontage wall. About half-past three in the afternoon, without any warning, the wall of the cellar fell in with a loud crash. The men employed on the work had a narrow escape, for they had left the spot where the fall occurred only a moment or two before. Steps were at once taken to prevent a further collapse, but at various intervals there were ominous cracks, and early on Saturday morning the building fell with a tremendous crash, the whole place being literally wrecked.—*Birmingham Post.*

SUNDERLAND BUILDING TRADES ASSOCIATION.—Speaking at the annual dinner of the Sunderland and District Building Trades Association, the President (Mr. J. B. Stott) alluded to the state of affairs that existed in the trade some years ago when, owing to the fact that the masters were sitting still, the men generally got all they asked for. He recalled the time when some of the employers met to consider an application for an advance from the men, who thought they were behaving generously in not asking for more. The master builders had been compelled to put their organisation on efficient lines as a result of the rapacious greed of the employees. With regard to the subject of disputes generally, he urged that, when a settlement could be arrived at by conciliation, they should not go to war, for this made both sides suffer. Dealing with the present outlook, he said the time had come when workmen should see that inflated wages could not be kept up on a falling market, for unless they saw that they would be simply locking the door on the building trade. A man must be blind who could not see that they were going to have depression in their trade as well as in other branches, and the masters and men would have to meet to consider the matter. He thought the time was coming nearer and nearer when they would have to tackle the question, and he expressed a hope that they would do it in a conciliatory spirit.

EDINBURGH AND LEITH MASTER BUILDERS' ASSOCIATION.—The annual dinner in connexion with the Edinburgh and Leith Master Builders' Association took place on the 11th inst. in the Royal British Hotel, Princes-street, Edinburgh. About 130 gentlemen were present. Mr. Robert Lamb, President of the Association, occupied the chair, and Messrs. Knox and M'Leod and Councillor Forrest acted as croupiers. The loyal and patriotic toasts having been honoured, Mr. James Millar proposed "The Lord Provost, Magistrates, and Town Councils of Edinburgh and Leith." He suggested that the Corporation might undertake the erection of working-class houses, and thus do something to relieve the distress in the building trades. His opinion was that no private individual could build houses for that class of people under the present conditions of the building rules. He also suggested that on inquiries into the housing question evidence should be taken from builders, architects, or house factors, as well as from other experts.—Bailie Bryson, who acknowledged the toast, said he was opposed to Corporations taxing one class of the population for the housing of another class. Councillor Dobie, who also replied to the toast, said, in regard to Mr. Millar's remarks as to the building of working-class houses, it was matter for consideration whether the proposed cheap electrical transit to the districts surrounding the city might not materially assist the erection of cheap working-class houses. If the proposed electrical tramways were laid, some experiment might be made in the housing question.—Mr. A. Hunter Crawford proposed "The Edinburgh and Leith Master Builders' Association." Speaking of the Dean of Guild Court regulations, he said he would like to hearten the civic authorities in their efforts to get good work put up in Edinburgh. The excellent quality of the building work in Edinburgh had been largely helped by the building regulations. Under these regulations there was in Edinburgh greater freedom in carrying out work than was to be found in other cities. Convener Barton replied. Mr. James Hall proposed "The Scottish Building Trades Federation." He thought there was no present necessity for working men's houses. There were 2,581 empty houses in Edinburgh this year, or 350 more than were empty last year. Did that show that more houses were wanted for the poor people? There were empty houses with rents as low as 6*l.*, and there were 1,100 empty houses rented at between 10*l.* and 12*l.* In the West Port and Tron-square the Corporation had built houses, the tenants in which had come complaining to him that they would not stay in them—they were so cold. If the bricks had been pressed, it would not have been so bad, but they were bricks with irregularities that crows could build their nests in. Councillor Forrest, who replied, agreed with Mr. Hall that the demand for workmen's houses was not so great as some people would like to make out. He remarked that the Building Trades Federation had not been taken up so enthusiastically as was to be desired, and he urged that everybody connected with the building trade should come into the combination.—Lord Dean of Guild Bruce proposed "The Architects and Surveyors." He said that the Scottish style of building impressed one too

much with its stability and solidity. That was all very well in its way, but he would like to see less of solidity and more of beauty in their elevations. The architects who most succeeded in that respect were sure to be the most successful in their profession. Speaking of Princes-street, he said that the height of the buildings in that street formed one of its attractions, and he hoped that where buildings there required to be heightened it would be done at no distant date. In regard to the Usher Hall—the site for which he thought was the best possible—he trusted that the Town Council would arrange for competitive plans being asked for, so that rising architects might have an opportunity of sending in plans. Mr. Lorne Campbell, in reply, said that architects had not in every case made the best of their opportunities in regard to the æsthetics of the buildings they designed. The Dean of Guild Court had no control over that matter, and he did not know that it would be wise to give the court that control. Most of the architects of Edinburgh were at one with the Lord Dean of Guild as to the propriety of asking competitive plans for the Usher Hall. He thought it would be a slight to the architects of Edinburgh if the designing of the Usher Hall were kept in a city department. A public-spirited man like Mr. Usher would have desired that his scheme should have been carried out in a public-spirited way, and the only way of doing that was to give all the architects of Edinburgh, or the whole of the architects of the kingdom if they liked, a chance of preparing plans for the hall. Edinburgh had a very unenviable reputation in regard to such competitions. On several occasions premiums had been paid for designs, and the work had not been proceeded with. The building of the Usher Hall provided an opportunity for Edinburgh redeeming itself in the eyes of architects. Mr. A. K. Smith replied for the surveyors. Other toasts followed.

THE RIVER LEA.—The Rivers Committee of the London County Council reported as follows at Tuesday's meeting:—"We have had our attention directed to a Report by the Engineer of the Lea Conservancy, dated November 28, 1902, which contains some interesting figures showing the reduction in the quantity of water in the River Lea and its tributaries. It appears from gaugings taken at Fielde's Weir, between the intakes of the New River and East London Water Companies, that the mean daily flow for the month of October last was 10½ million gallons; the mean daily flow for the first ten months of 1902 was 20½ million gallons; the mean daily flow for the first ten months of each year for the past twenty years (1882-1901) was 82¼ million gallons. The Report also states that the river bed was found to be dry above Church-street, Luton, and that the bed of the tributary Mimram was entirely dry above Kimpton Mill, and that there was only a small pool below the same. The bed of the tributary Reb was also dry at Westmill, and that of the Beane at Frogmore Park. The Report of the Water Examiner for October, 1902, shows that the average daily quantity of water abstracted during that month by the New River Company from the River Lea above Fielde's Weir was 16,865,499 gallons, while the average daily quantity taken by the East London Water Company from below the weir and from storage was 6,721,139 gallons. No particulars are given as to what proportion of the 6,721,139 gallons was taken from storage, but there seems to be no doubt that, except for a small quantity required for navigation purposes, the Water Companies abstracted all the water of the River Lea during the month in question."

NEW ALTAR, ST. PATRICK'S R.C. CHURCH, COATBRIDGE, GLASGOW.—The new altar erected at St. Patrick's, Coatbridge, to the memory of the late Canon O'Keefe has just been dedicated. The design is by Messrs. Pugin & Pugin, London.

WATER SUPPLY, FYLDE.—A Local Government Board inquiry was held at the Blackpool Town Hall on the 3rd inst. by Mr. W. O. E. Meade-King, M.Inst.C.E., into the application of the Fylde Water Board to borrow 159,407*l.* for the construction of a new reservoir to hold 332 million gallons of water at Grizedale Lea, Burnace-with-Bonds. Mr. T. Loftus, clerk to the Fylde Water Board, said that 137,727*l.* was required for the new reservoir, 20,000*l.* for the general extension of the water main, and 1,680*l.* for miscellaneous work. The proposed term of the loan would be sixty years. Mr. Waring said the site was close to the other reservoirs, convenient to the present works, and near to the main pipe leading from the intake at Calder Vale. The plans were explained by Mr. Waring.

LEGAL.

BRICKLAYER'S CLAIM UNDER THE WORKMEN'S COMPENSATION ACT.

THE case of Harrison *v.* Guthrie & Son came before the Court of Appeal composed of the Master of the Rolls and Lords Justices Romer and Mathew on the 12th inst. on the appeal of the defendants from a decision of the County Court Judge of Durham, sitting at Darlington, awarding the plaintiff 15*s.* a week compensation under the provisions of the Workmen's Compensation Act, 1897, in respect of personal injuries sustained while in the defendant's employment.

Mr. Shortt appeared for the appellants; and Mr. Ruegg, K.C., and Mr. Chester-Jones for the respondent.

Mr. Shortt said that the plaintiff was a bricklayer employed by the defendants, who were a firm of contractors executing a contract for the building of a new wing on to a dwelling-house. There were a vinery and outhouses which were physically attached to the main building. There was also a garden wall, at the end of which was an engine-house, and some 60 yards distant from that engine-house there was a cesspool into which the premises were drained. On the day the accident occurred there was a heap of bricks laying close by the cesspool and which were being used in repairing the cesspool. The plaintiff, who almost immediately before had been employed in the vinery, went to the heap of bricks, and while in the act of "chipping" one of the bricks a piece of grit went into his eye. This occurred on November 21, 1901, and on November 23 he went to the hospital, where his eye was operated upon, the doctor stating that the piece of grit had caused an abscess to form.

The Master of the Rolls hoped that the plaintiff had not lost the use of his eye.

Mr. Shortt replied that he was sorry to say that he had, and there was also a risk of the other eye being affected in consequence of the accident.

Mr. Ruegg stated that the man's other eye had actually become affected.

Mr. Shortt said that the learned County Court Judge held as a fact that the working on this cesspool was working "on, in, or about" a building over 30 ft. high where a scaffolding was being used. It was not open for him (Counsel) to suggest that the main building did not come within the description of a building over 30 ft. high, and undoubtedly scaffolding was being used on the new wing and also in connexion with one of the chimneys, but his submission was that the plaintiff being at work and engaged at the cesspool at the time of the accident, he was not working upon the main building, and therefore the accident did not happen "on, in, or about" the main building.

Lord Justice Romer said he supposed that the cesspool was connected by means of drains with the house?

Mr. Shortt said that that was so. His submission, however, was that that fact did not render the cesspool a part of the main building.

The Master of the Rolls, without calling upon counsel for the respondent, in giving judgment, said that this court could not interfere with the findings of fact of the learned County Court Judge. Mr. Shortt could only succeed by establishing that there was no evidence on which the learned County Court Judge could find that the injured man was working "on, in, or about" a building over 30 ft. high. The question was whether the cesspool was a part of the house which was being repaired by means of scaffolding. It undoubtedly was an essential part of the house, and was physically connected by a drain with the house. That being so, he thought there was ample evidence on which the learned County Court Judge could come to the conclusion he did, and therefore the appeal must be dismissed with costs.

The Lords Justices concurred.

TRADE LIBEL CASE SETTLED IN CHANCERY DIVISION.

MR. JUSTICE KEKEWICH, in the Chancery Division, on the 11th inst., concluding the hearing of the case of Alcott *v.* Lefroy, an action by the plaintiff, a manufacturer of red-gum paving-blocks, used for paving purposes, against the defendant, the Agent-General for West Australia, for an injunction and damages in respect of an alleged libel contained in a Report prepared by a Mr. Herbert Stone to the effect that the blocks of red gum then being laid in Whitehall, and supplied by the plaintiff, were unsatisfactory. The defendant printed and published the Report in the autumn of 1901. The Report stated (*inter alia*) that the blocks being used at Whitehall were not of the same quality as those used in the experimental strips; that whatever durability the best of the mature wood might possess when sound and properly seasoned, it was of no value in the condition in which it was supplied at Whitehall; that as the mature sample supplied by the plaintiff showed the liability of the wood to the attacks of vegetable parasites, the wet and sappy wood must be liable to a much greater degree; and that the blocks laid would open in a great number of cracks when exposed to the sun in the same way as those at the back of the statue in Waterloo-place, and that each crack would admit moisture and become a focus of decay. The defendant pleaded a denial that the words complained of were defamatory, and alleged that they were fair comment on a matter of public interest. Defendant further pleaded that the words complained of were true in substance and in fact, and that the same were published by him pursuant to his duty as Agent-General for West Australia to protect the commercial interests of West Australia.

Mr. Warrington, K.C., Mr. Foote, K.C., and Mr. George Cave appeared for the plaintiff; and Dr. Blake Odgers, K.C., Mr. Stewart Smith, K.C., and Mr. G. Lawrence for the defendant.

In the result the action was settled on terms as stated.

Dr. Blake Odgers, on behalf of the defendant, stated that his client was not interested in any wood paving firm or company, and that he employed Mr. Herbert Stone to make the report in perfect good faith. He now discovered that the statements in that report could not be substantiated, and he regretted having published them.

Mr. Warrington said that the plaintiff had suffered a considerable amount of injury from the statements made in the report, but after his learned friend's expression of regret on behalf of the defendant he had no desire to pursue the matter vindictively. There would accordingly be judgment upon the terms arranged.

His lordship thought the case had been settled in a very satisfactory manner.

THE LEYTON VIBRATION CASE.

THE case of Hawkes *v.* the Leyton Urban District Council came up before Mr. Justice Buckley in the Chancery Division on the 12th inst. on a motion by the defendants that an order made by his lordship on April 30 last year whereby a writ of sequestration was directed to issue against the defendant Council might be discharged, or, alternatively, that the operation of the order might be directed to be stayed until further order.

Mr. H. Terrell, K.C., in support of the application, said that in February, 1900, his lordship gave judgment against the Council, restraining them, their servants and agents, from causing a nuisance by employing gas-engines in connexion with their electric-supply works at Leyton. That order had been stayed until December 17 of this year on the defendants undertaking to make certain alterations and to cease altogether to use their gas plant. This had been done. Steam-engines had now been substituted for the gas-engines, and the gas-engines had not been worked since.

Council on behalf of the plaintiff said he understood the defendants' gas plant had been entirely disconnected and would never be used again. Under these circumstances he did not oppose the application provided the plaintiff's costs as between solicitor and client were paid by the defendants.

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Mr. Ernest Pollock appeared for the plaintiff; and Mr. Witt, K.C., and Mr. Dennis for the defendants.

It appeared that Mr. Arber was the architect for the erection of the New Palace Theatre at Plymouth. During the course of the work it was found necessary to erect a porch or portico, which involved a certain amount of metal work, and in consequence of a letter sent by the defendants to the plaintiff a verbal contract was entered into whereby the plaintiff agreed to supply the metal work. This he did, and sought to recover the amount from the defendants.

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His lordship in giving judgment wished he could assist the plaintiff, but he could not. It was said that this work was done under a contract, and that defendants should pay. No question of custom had been suggested, and there was no writing in the case. The sole question was whether it was the intention of the parties that there should be a contract between them. In answering that question he went by the plaintiff's evidence alone. He did not pay any attention to defendant's evidence. But on plaintiff's evidence alone it did not look at all as if there was any intention that the defendants should do anything but act as architects on behalf of somebody. It was plaintiff's business to inquire the name of the buyer if he wanted to know it. He could not help thinking that it was not the intention of the parties that Mr. Arber should be personally liable. He did not think it was. That being so, he did not see how the action could possibly succeed. He dismissed the action, but did not feel inclined to give defendants any costs.

ACTION FOR BREACHES OF A COVENANT IN A LEASE.

MR. JUSTICE LAWRANCE and a special jury had before them the case of Lord Howard de Walden *v.* Brutton on the 12th inst., an action by the plaintiff to recover possession of Nos. 29 and 30

Saville-street, Marylebone, in consequence of breaches of covenant by the defendant, Mr. E. J. Brutton, a retired solicitor, the assignee of the lease of the premises in question.

The plaintiff was the owner of the premises, and in December, 1900, the defendant became the assignee of a lease of Nos. 29 and 30, Saville-street, granted by the trustees of the will of the fourth Duke of Portland to a Mr. Barber. This lease contained a covenant by the lessee that he would not allow to be carried on on the premises the trade, business, or calling, amongst other things, of a brothel-keeper. The plaintiff's case was that this covenant had been broken, as the premises in question, which consisted of a number of flats, had been used for immoral purposes. There was no suggestion that the defendant had any personal knowledge of the improper use to which the premises were put, but it was contended that he was responsible for the breach of the covenant.

In the result a settlement was arrived at, the defendant admitting the breach of covenant and that the premises were improperly used, but without his knowledge, and undertaking that there should be no future breach of the covenants in the lease. On these terms the action was stayed.

Mr. Lawson Walton, K.C., and Mr. Earle appeared for the plaintiff; and Mr. Duke, K.C., and Mr. G. Hohler for the defendant.

PLASTERER'S LABOURER'S CLAIM UNDER THE WORKMEN'S COMPENSATION ACT.

THE case of Wagstaffe *v.* Perks & Son (Handel Firth, third party) came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Romer and Mathews, on the 12th inst., on the defendants' appeal from a decision of Judge Smyly, sitting in the Derby and Long Eaton County Court.

It appeared that the matter arose out of a claim by the plaintiff, a plasterer's labourer, for compensation under the Workmen's Compensation Act, 1897, in respect of personal injuries sustained by him while in the employ of the third party, Handel Firth, who was sub-contractor to the defendants—a firm of builders. The plaintiff sued the defendants as "undertakers" of the work on which he was engaged at the time of the accident, and in the County Court he obtained judgment against them for 15s. 7d. a week compensation during incapacity. The defendants thereupon sought to be indemnified as against the sub-contractor who, they submitted, was the "undertaker" of the work within the meaning of Section 4 of the Act. The learned County Court Judge, however, held that Firth was not liable to indemnify the defendants, on the ground that they themselves were the "undertakers" within the meaning of the Act. Hence the present appeal of the defendants.

At the conclusion of the argument of Mr. Hextall, counsel for the appellant (the third party was not represented by counsel), the Master of the Rolls, in giving judgment, said that unless the sub-contractor was himself liable in some form or other, the defendants could not claim to be indemnified as against him. The whole question depended upon whether the sub-contractor was the "undertaker" who undertook the construction of the building in question. The sub-contractor contracted with the defendants to find the labour for the plaster work and do the work with materials supplied to him elsewhere. The question therefore was whether a person who had undertaken to do certain work with materials supplied to him by others than the defendants was to be considered as the "undertaker" within the meaning of the Act. The House of Lords, in the case of Cooper & Crane *v.* Wright, had laid it down that a sub-contractor could be as much an "undertaker" with regard to the work he had undertaken to carry out as was the original contractor himself. On this authority, therefore, he must hold that the sub-contractor in this case was the "undertaker" in the meaning of the Act. The decision of the learned County Court Judge would therefore be reversed, and the defendants must be held to be entitled to be indemnified by the sub-contractor.

The Lords Justices concurred.

The appeal was accordingly allowed, with costs.

ACTION AGAINST A WOOD-PAVING COMPANY FOR ALLEGED NEGLIGENCE.

MR. JUSTICE WRIGHT, sitting without a jury in the King's Bench Division on the 11th inst., concluded the hearing of the case of The Westminster Electric Supply Co., Ltd. *v.* The Improved Wood Pavement Co.

In this case the plaintiff company have Parliamentary powers for the supply of electric energy in the City of Westminster, such energy being distributed to the plaintiffs' customers by means of (*inter alia*) insulated copper mains laid beneath the roadway in the districts supplied by the plaintiffs. These mains are composed of a copper core surrounded by alternate layers of jute and lead, the whole being enclosed in a lead casing to protect the mains from the action of water. In October, 1900, the defendants were engaged in laying wood pavement on a portion of the roadway in Berkeley-square, W., under which the plaintiffs' mains were laid, and the plaintiffs' case was that through the alleged negligence of the defendants in laying the pavement one of their mains was damaged by a pick or wedge being driven through the covering of it. Through this the main became exposed to the moisture of the surrounding earth and thus became rotten and lost its insulating qualities, the electric current thus being enabled to escape and the lead covering and jute insulation of the adjacent main was thereby destroyed and the main rendered useless, thus stopping the supply of the current to the plaintiffs' customers. The plaintiffs' claimed as damages from the defendants the expenses they had been put to in putting down a considerable length of new main and also the expenses of taking up and relaying the wood pavement to the satisfaction of the Local Authority.

The defendants denied the alleged negligence and also the alleged damage to the plaintiffs' mains.

In the result his lordship, after hearing the evidence, in giving judgment, pointed out that there had been no cross-examination by the plaintiffs' counsel of the defendants' witnesses as to the specific dates on which the damage was alleged to have been caused. It appeared to him that there was no cause of action by the plaintiffs against the defendants. There must be judgment for the defendants with costs.

Mr. Horace Avory, K.C., and Mr. Kennedy appeared for the plaintiffs, and Mr. Bray, K.C., and Mr. Spencer-Bower for the defendants.

IMPORTANT POINT UNDER THE FACTORY AND WORKSHOP ACT, 1901.

MR. JUSTICE BUCKLEY, in the Chancery Division, on the 16th inst., delivered a considered judgment in the case of Toller *v.* Spiers & Pond, Ltd.

The question in the case was whether the plaintiff, who is the owner, within the Factory Acts, of a building called the City Mills building, in Upper Thames-street, could compel the defendants to allow him to enter upon their demised premises for the purpose of executing certain works in compliance with a notice of the London County Council dated July 10 last.

It appeared that the building in question is a large one situated in Upper Thames-street. The structure consists of a basement, a ground floor, and seven floors above. The building from the basement up to and including the fourth floor, (the second floor excepted) formed one factory within the meaning of the Factory Acts, and this was in occupation of the defendants under a lease of a term of years. The fifth, sixth, and seventh floors formed another floor in the occupation of a firm of packing-case makers under leases expiring in 1911. The only staircases in the building were at the extreme northern end, the consequence being that if a fire were to occur in the centre of the building the southern end might be cut off from the northern end. The London County Council served a notice upon the plaintiff to the effect that it was advisable to have an alternative means of escape by a staircase at the southern end, but inasmuch as the second floor was not a factory within the meaning of the Acts, there was no power to interfere with the occupier of that floor, and, therefore, the material part of the works required by the notice consisted in the construction at the southern end of a staircase starting at the level of the third floor and going up to the seventh floor, and communicating with each floor of the building intermediate between the 3rd and the seventh floors.

His Lordship held that the two factories in the building were, for the purposes of the Factory and Workshop Act, 1901, separate factories, and did not constitute a tenement factory, and that the Council could only proceed legally under the Act if the building in question was a tenement factory. To support the action it was necessary to find in the Act a provision that two factories which had a common owner should, for the purposes of Section 14, be deemed to be one factory. There was no such provision in the Act. He thought that the plaintiff was wrong in contending that he had as against the defendants the legal right to enter and do these works, and the action must be dismissed with costs.

Mr. Astbury, K.C., and Mr. R. J. Parker appeared for the plaintiff; and Mr. Buckmaster, K.C., and Mr. Clauson for the defendants.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

15,889.—A COMBINED VICE, WORK-HOLDER, AND TABLE: *H. Brett.*—On the frame or table is mounted a right and left handed screw, which adjusts the jaws. A screw clamps the table, which revolves upon a centre, to the bed; a screw-clamp secures the work to a saw-table, and is held between the jaws and kept steady with notched pieces. There are arm-rests, which are adjusted with screws.

15,929.—PROCESS OF MAKING COLOURED DESIGNS ON STONE, CEMENT, MARBLE, AND OTHER SURFACES: *E. E. Hippe and T. Holm.*—Contour lines, painted several times over, are drawn upon the surface of the warmed stone with a pen or a fine brush wetted with a blackened water-glass solution or some similar fluid that will close the pores. On the two sides of the contour line are respectively applied coloured fluids that will not mingle with one another—as, for instance, oil, turpentine, ether, wax, resin, or petroleum on the one side, and glycerine, spirits of wine, ammonia-water on the other side, so that the line retains its sharpness in the body of the stone or marble as the one fluid limits the expansion of the other below the line. The process extends to the colouring, if desired, of the stone, in which case the laying-in of the colours may be facilitated by the employment of a frame-work of metallic strips shaped in accordance with the contour lines. In the case of a thin slab, it is stated that the pattern will extend right through when it is applied upon both sides.

15,945.—APPARATUS FOR MIXING CONCRETE: *R. H. Taylor.*—At each side of a cylinder is a cone having opened ends that run upon roller bearings, the frame being mounted on a bow carried by trunnions. A bevel-wheel in engagement with a pinion on a shaft through one trunnion turns the container, which a quadrant upon the other trunnion turns into the position for discharge. In the normal position the feed-end fits closely against the mouth of the hopper.

15,968.—AN AUTOMATICAL CUT-OFF FOR GAS-COCKS: *H. Roslin and S. Srubert.*—The automatical closing of the cock of the main pipe is effected when a switch is worked by means of the extinction of a gas jet fed by the pipe. As the switch closes, an electrical current energises an electro-magnet so that the armature is drawn away from a pivoted lever that serves to stop a stud projecting from a weighted segment mounted upon the axis of the cock. A weight suspended from the segment shuts the cock with the fall of the pivoted lever.

15,972.—A WORKMAN'S CRAMP: *W. J. Templeton.*—The jaws are pivoted on to blocks that slide upon arms in engagement with screws upon the latter. On the spindle to which the arms are pivoted is a bevel wheel that engages with bevel wheels at the ends of the screws. All the jaws can be moved inwards or outwards together when the squared ends of the screws or of the spindle are turned. Sliding rods keep the sides of the jaws in alignment, and a screw that works in a slotted quadrant fixes the arms at any angle required.

16,054.—SIPHONICAL DISCHARGE: *S. Gruner.*—To a sleeve which slides freely upon a rod is fastened a flexible siphon, of which the mouth is fixed, and which weighted levers normally sustain above the water-level; a rod will lower the crown of the siphon below the water-level when the flush is to be started. For a bell siphon a telescopical stand-pipe may be used, and the siphon may either end in a rigid pipe that slides freely in the stand-pipe, or be set outside the cistern.

16,085.—A SUPPORT FOR THE HEELS OF JIBS, DERRICKS, &C.: *W. H. Burbidge.*—The spherical head and the collar of the vertical pivot-pin fit into the cup of a casting which is secured to the wall, &c., and the heel of the jib may fit some part of the head in order to lessen the amount of strain upon the pin.

16,123.—AN ELECTRICAL TERMINAL COUPLING: *T. Jacob.*—A split sleeve which has a cone-shaped exterior and a screw-nut fastens a conically-bored case having a connecting lug to the end of a conductor; wedges may be substituted for the split sleeve.

16,145.—GLAZING APPLIANCES: *S. Roberts.*—A wooden core cut to shape and covered with lead or other non-corrosive metal forms the cap, which is fastened to the bar with nuts and bolts. The joints are rendered watertight with packing-strips of asbestos.

16,150.—AN APPLIANCE FOR USE WITH ARC LAMPS: *J. Lawrence.*—The barrel of a winch for lifting or lowering an electrical arc lamp turns about a fixed support that extends from the bracket, a pawl which slides vertically in both the bracket and the support has a straight stem with two teeth that engage with ratchet teeth in the flange of the barrel, but not when the stem of the pawl is raised with a handle, the insertion of the handle into the support causes a projection from it to enter a slot in the front end of the barrel so that the latter can be turned.

16,158.—A ROAD-BREAKING MACHINE: *H. V. Barclay.*—For breaking up concrete, bitumen, asphalt, and similar surfaces the inventor arranges a row of vertical rods having cutting tools at their ends in a frame wherein they are worked with cams upon a horizontal shaft as they engage with tappets on the rods. The fall of the cutters is regulated by stops upon rods, which are joined adjustably to the tappets. The steel cutters are fastened on the rods with thumbscrews or grippers having wedge shaped collars that slide on the rods. An ordinary steam-roller will serve for the driving of the machine.

16,162.—IMPROVEMENTS IN ATMOSPHERICAL BURNERS: *C. M. Kemp and G. H. Denny.*—For effecting an increase of gas supply to the mixing-tube and a diminution of the air supply, or *vice versa*, on the end of the gas nozzle is screwed a cap having a projection that engages with a slot in the lower portion of the mixing-tube so that one can lift or lower the cap by turning the outer tube upon the nozzle, otherwise the projection may be formed upon a sleeve of the cap. The supply of gas becomes lessened and that of air increased with

a movement downwards of the cap, whilst contrary effects will follow as the cap is raised, by reason of the cone-shaped extension on the nozzle and of the partial shutting of the openings. The engagement of its lower end with a collar on, or a groove in, the nozzle obviates any vertical motion of the outer tube.

16,165.—TOPS FOR CHIMNEYS AND VENTILATION SHAFTS: *F. Browne.*—The uptake, which has slits beneath a guard in its base, is made with branches at the sides of a middle hole, and for ventilating purposes a cap is set above a latticed outlet, with a metal tube which has branches at its upper end.

16,179.—A LIFT VALVE: *W. H. Wilson.*—For reducing shocks in screw-down valves, a short spindle carrying two valve-discs which are faced with washers is swivelled on to the principal spindle. Both valves close without shock as the lower and softer washer first makes contact with its seating, a channel in the casing carries leakage past the spindle.

16,182.—BOARDS FOR ELECTRICAL JUNCTION BOXES, &C.: *E. Waskowsky.*—The boards have insulating blocks which are fastened upon base-plates. Recesses in the blocks take clamping-bolts, around which air spaces are left. The branch wires are laid between the insulating blocks, the cable wires being secured at the upper clamping-bolts.

16,184.—FLANGE JOINTS AND SCREW UNIONS FOR PIPE COUPLINGS: *H. S. Crombie.*—Of the two parts of the coupling, one has an annular recess upon its face to be closed internally by the flange, and formed to take the metallic packing-ring, whilst the other part has a rounded or convex face, a screwed sleeve, or bolts through projecting flanges couple the two parts together.

16,213.—PLUG COCKS: *G. L. Bates.*—The plug of a full-way single or multiple way plug-cock has a cross section of less than a semicircle. The spindle, which may be screwed into the casing, may be cranked and secured to the plug with its cranked portion turned either from or towards the plug.

16,249.—FITTINGS FOR SINKS, LAVATORY BASINS, BATHS, &C.: *E. Stephenson and S. Robinson.*—The cone-shaped end of the overflow pipe is arranged in engagement with a conical valve seating, which is fastened by its flange. The discharge valve is opened and closed by the turning of the overflow pipe, the conical end and the valve seat having their ports arranged accordingly. A spindle, which engages with a cross-bar, and is kept down with a spring, rotates the overflow pipe.

16,293.—FLUSHING APPARATUS: *F. Burgum.*—The float of the inlet cock is utilised as the crown and inlet of the siphon for discharge. When the crown is pressed down by the hand, water flows to the outlet and so starts the flush. In another form an intermittent and automatical action is brought about by means of a well at the base of the float which is emptied with an auxiliary siphon, and a dribbling time passage is fitted on the inlet cock.

16,352. — A CHAIN PIPE-WRENCH: *T. H. Williams & Co.*—The chain is linked to a rivet which is affixed either centrically or eccentrically to the head, hooks at the top and bottom of the tool and engaging with the cable chain (or with pins upon a flat chain), secure the loose ends of the chain which, when so secured, rests in a space into which it can be put from the side. The flat sides of the head are in a line with the handle, and the head should be toothed in order that one may use either face.

16,373.—APPLIANCES FOR USE WITH RAIN-WATER AND VENTILATION PIPES: *C. Sciers.*—The invention comprises a holdfast or bracket, and a sliding socket-section for facilitating the cleaning of the pipe and its connexions. Grooved jaws of the holdfast take lugs formed at the sides of the bracket, which are then fastened with set screws which can be removed so that one can lift the socket part or cause it to slide along the upper section of the pipe.

16,400. — CONSTRUCTION OF TERRACES, SUBWAYS, AND ROOFS: *T. Potter.*—Until the concrete has become set it is held up with beams and centering-boards laid upon removable wedges on L-shaped hangers secured to the walls; in order that the concrete shall not crack it is moulded in short widths. Water is carried off by gutters or channels fitted in the joints.

16,427.—IMPROVEMENTS IN GRABS: *F. E. Hulett.*—The cutting edges of the grab work in flat curves as they come together; to the front ends of the jaws are pivoted four levers hanging from a shaft which is carried by triangular side-plates. Ears fasten the rear ends of the jaws to pivots around cams that are mounted upon the projecting ends of other shafts carried by the side-plates. Cables from the cams are passed to drums upon the projecting ends of another shaft carried by the side-plates. On the last-named shaft are drums from which cables pass around loose pulleys, and so to the hoisting engine. The jaws are shut by slackening cables passed from the pivots to the hoisting engine, and they are opened by slackening the second-mentioned cables, and by sustaining the grab upon the last-mentioned cables.

16,474.—DUSTBINS: *R. H. Quinc.*—The frame of the dustbin fits into an opening in a wall having a door, and is formed of half-rounded top and bottom bars secured to a wooden frame. In another form, the frame has a hinged front, so that the bin can be filled and be removed on one side of the wall.

16,495.—A METHOD OF GLAZING: *G. Tolley.*—The leaden strips which are used for fastening the sheets to wooden or metallic bars have ribs and wings, and gutters to carry off the water of condensation.

16,508.—MANUFACTURE OF ARTIFICIAL STONE, SLABS, TILES, &C.: *L. Nobis and A. Wensel.*—A composition is made of water, Portland cement mixed with asbestos-powder, and blast-furnace slag mixed with asbestic. During the process of moulding the goods may be strengthened with asbestos-braids inserted into the mass. The braids, from 4 in. to 6 in. long and from 2 mm. to 5 mm. thick, are stretched in a frame and soaked in a thin mixture of asbestos-powder, water-glass, and powdered glass; a coating of that admixture is then applied to them.

16,561.—A FUEL-ECONOMISER: *A. Gomersall.*—The contrivance, which may be made either in one piece or in two, has a false front and a false bottom, the latter being arched at the middle so as to constitute an air-chamber. Bars or pierced slots are fitted in the false bottom. The thickness of the grate-bars should be gradually lessened upwards. If the appliance is made in two pieces, the front portion slides in front, or fits on the top, of the bottom portion.

16,588. — A NON-CONDUCTING COVERING FOR WALLS, PARTITIONS, PIPES, &C.: *G. A. Herdman.*—The covering material consists of slagwool treated with some adhesive substance, such as silicate of soda, and is then pressed in a mould by ramming it around a mandrel and inside a sleeve of muslin to make it into tubes. (Confer also No. 3,443 of 1900.)

16,600 — A GUARD FOR WOOD-PLANING MACHINES: *F. Malkin, F. F. Binns, and F. Foster.*—A guard, which can be adjusted to differently sized cutters, has a cover made of two semi-circular parts whereof one is mounted upon an upright rod of which the height is adjusted in a bracket; the other part slides lengthwise in the former part, and is secured in its place with a screw and a slot.

16,628.—AN ELECTRICAL INTERRUPTER: *H. C. Newton.*—A metallic bridge-piece is mounted upon a rod which a motor reciprocates so as to cause it to dip into and out of some mercury in a chamber divided into compartments; the height of the mercury can be varied by means of a saddle or block. In other forms of the appliance pivoted bridge-pieces are used.

16,640.—ARTIFICIAL MARBLE: *O. Hertwig and E. Liebaug.*—An intimate admixture made of magnesium chloride, magnesite, flint, kaolin, and water is poured upon polished plates of glass or other substance, and is then taken off when it has become hard. Pigments may, if desired, be added to the ingredients. The composition is intended for the manufacture of wainscotting, steps, slabs, window benches, and similar goods.

16,665.—SHAFT TOPS FOR VENTILATION PURPOSES: *J. Orr and T. McCulloch.*—The top has a flared head fitted with a perforated top plate, and having a separate cover, conical rings being introduced in some instances between those parts. Short tubes may be fitted on to the openings in the top plate, and the plate and cover are in one form shaped as a cylinder.

16,684. — EXPANSIBLE PULLEYS FOR ROPE-TACKLE: *D. N. Bertram and S. Milne.*—The two halves of the pulley, each of which has arms, a boss, and one half of the rim, are divided in a plane through the bottom of the groove. One half is moved away from the other for adjusting the diameter, and the two halves, which may be held together with springs, are joined to one another with a set of crossed and pivoted levers, of which the inner ends engage with the bosses and the outer ends with the rims. The boss of the left-hand half of the pulley is held up with the boss of a hand-wheel screwed upon a sleeve on which is a brake-wheel that will bring it to rest and provides for adjustment during the movement of the pulley.

16,697.—MEANS OF WARMING BUILDINGS: *R. Roeder.*—A radiator or heater has a double-walled chamber which is divided into compartments and has ribs on its interior. It has also an inner box into which, and thence to the outlet, the heating medium flows up the compartments.

16,710.—ELECTRICAL SWITCHES: *H. W. Cox.*—The fixed contacts of a double-pole switch are arranged in two pairs, between which insulating-plates are laid; other plates pivoted in recesses in a rotatory block carry the contact-brushes, and have rollers that run upon the edges of the former plates, which constitute cams and, in combination with springs, effect a quick action. A ratchet device provides for the turning of the switch in only one direction; the contacts, which have suitable arc-ing tips, may be connected with fuses or conductors to the terminals, and a single pole or other variation of switch may be produced by varying the contacts or the number of arms.

16,721.—CONSTRUCTION OF FOUNDATIONS IN WATER-CHARGED SOIL: *N. Schielkiewicz.*—For laying a foundation in sand, gravel, or other soil that is charged with water the inventor forces liquid cement through pipes into the ground whilst water is being pumped up through another pipe. As soon as cement is seen in the suction-pipe the apparatus is lifted up, and the layer of gravel above is charged, and so on, until the surface is reached. Plugs of wood or metal inserted in the tubes will be removed by the raising of the tubes or the pressure of the cement.

16,732.—FASTENINGS FOR WINDOWS: *A. L. Whitehead.*—One end of a plate is pivoted on to the meeting-bar of the upper sash, and its other end has cross-bars which serve to guide the bolt; the window is fastened by turning the plate over the lower sash, whereupon the bolt will fall against its face. When the bolt is lifted and the plate is turned about its pivot to liberate the sashes the window can be opened.

16,738.—A PILE DRIVING MACHINE: *T. Möbus.*—The ram-block works out of the water and within a tube that slides in guides upon the frame and has a cap fitted with grippers which hold the pile; a boat carries the ram-frame, rack-and-wheel gearing lifts and lowers the hollow tube, wedges through a screwed rod draw the grippers of the cap together. The tube can be set at any angle desired, as the ram-frame is pivoted upon a bracket, and mechanical instead of hand power may be used for raising the ram-block.

16,739.—MEANS OF STOPPING LEAKS IN PIPES: *J. Dunn.*—For packing a leak in elbows, tees, and other joints without disconnecting the pipe the inventor devises a compressible packing-ring, which is held in its place by an outer ring and a clamp which he secures on the pipe with inwardly projecting set screws. The four sections of the outer ring are hinged to one another with complemental tenons, which enable the parts to move lengthwise.

16,762.—ELECTRICAL SWITCHES: *H. O. Farrell.*—For affording good contact at the pivot and a quick break when the switch is opened the switch-blades have their two members hinged together and pivoted in a post, or they are similarly connected. When in the "on" position the pressure together of the free ends in the contact-jaws imparts a resultant pressure on the post. In another form two adjustable screws effect the pressure upon the switch-blades.

16,775.—MEANS OF HEATING WATER FOR BUILDINGS, HOT-HOUSES, &C.: *R. Stubbs.*—A set of tubes, joined to one another at their ends by cross tubes or a hollow flat box, forms a hollow water chamber which is placed above a saddle-shaped boiler and communicates by two pipes with the flow-pipe and the return-pipe; other two pipes from the water-jacket of the flue communicate with the flow-pipe and the return-pipe respectively.

16,788.—A BALL-AND-FLOAT VALVE: *J. Askew.*—For the rapid filling of a flushing cistern and for similar purposes the inventor causes the float-arm, which is joined to the cock, to be locked when in the opened position by means of a pivoted arm on which a float is mounted, and of which a tooth, near the pivot, engages with a rack upon the arm of the valve-float during the filling of the cistern. The locking-float will be lifted and released when the cistern is full.

16,704.—MANUFACTURE OF BRICKS: *The Baron V. Barreto.*—For making and hardening bricks that contain lime, a compound of unslaked lime, 1 part, and ground ashes, clinker, or sand, 2 parts, with water enough for slaking the lime, is put into a drum which is rolled to and fro upon rails. A mixture containing about 10 per cent. of lime is obtained by adding more ashes or sand. The moulded goods are hardened by the action of steam in a cylinder for about twelve hours, at a pressure of 110 lbs. to the square inch. The drum has a water-supply pipe, steam-tight covers, a safety valve, a pressure gauge, &c., and the moulded bricks are stacked upon a table in a truck that runs upon rails in the steaming cylinder.

MEETINGS.

FRIDAY, DECEMBER 19.

Architectural Association.—Mr. W. H. Bidlake on "The Study and Delineation of Old Buildings." 7.30 p.m.

Institution of Mechanical Engineers.—Mr. J. N. S. Williams on "Recent Practice in the Design, Construction, and Operation of Raw Cane Sugar Factories in the Hawaiian Islands." If time permits, there will be presented to the meeting a brief Report from the Committee appointed by the Council in April last to consider and analyse the written communications received in continuation of the discussion on the standardisation of flanges and flanged fittings. 8 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. P. R. Wray on "Electricity Supply from Double-Current Generators." 8 p.m.

SATURDAY, DECEMBER 20.

The Craft School (Globe-road, Bethnal Green, E).—Mr. G. Laurence Gomme on "Old Christmas Customs." 8.30 p.m.

TUESDAY, DECEMBER 23.

Institution of Civil Engineers.—Paper to be further discussed—"The Rupnarayan Bridge, Bengal-Nagpur Railway," by Mr. S. Martin-Leake. 8 p.m.

SATURDAY, DECEMBER 27.

Royal Institution.—Professor H. S. Hele-Shaw on "Locomotion: on the Earth, through the Water, in the Air." 3 p.m.

SOME RECENT SALES OF PROPERTY

ESTATE EXCHANGE REPORT.

December 2.—By STRAKER & SON (at Abergavenny).

Llantillio Pertholey, &c., Mon.—Little Llwyn-frank Farm, 84 a. 1 r. 32 p., f., y.r. 92*l.* 10*s.*— £1,500

December 3.—By LEE & FARR (at Slough).

Slough, Bucks.—1, Mackenzie-st., and 77, High-st. (S), f., y.r. 97*l.*	£2,300
73, High-st. (S), f., y.r. 60*l.*	1,430
12, William-st. (S), f., y.r. 43*l.*	870
Stoke-rd., the Leopold Coffee Tavern, f., y.r. 25*l.*	630
Jubilee Villas, f.g.r. 9*l.* 12*s.*, reversion in 84 yrs.	250
Windsor-rd., Herschel Lodge and Milton Lodge, f., y.r. 121*l.*	2,000
Windsor-rd., f.g.r. 30*l.*, reversion in 68 yrs.	750

December 4.—By SLADE & CHURCH (at Croydon).

Croydon.—Blunt-rd., Claremont House, e.r. 100*l.*; also 15 and 17, Croham-rd., y.r. 56*l.* f.	2,160

December 6.—By FOX & VERGETTE and G. C. WALKER (at Bedford).

Cople, Beds.—Grange Farm, 111 a. 3 r. 9 p., f.	3,000
Part of Maidle Farm, also allotments, 281 a. 1 r. 38 p., f.	7,500
Hoo Farm, 932 a. 0 r. 13 p., f.	4,500
The Five Bells Inn and 5 a. 0 r. 14 p., f.	2,100
House (with off-licence) and 3 a. 0 r. 17 p., f.	675
Twelve freehold cottages and 8 a. 0 r. 38 p.	1,200
Six freehold houses and 2 a 1 r. 5 p.	700
Willington, Beds.—Two freehold cottages and 5 a.	700

December 8.—By CHANCELLOR & SONS.

Speen, Berks.—Foley Lodge and 53, a 0 r. 26 p., f.	10,000

By CRONKS.

Sevenoaks, Kent.—The Common, Fernside and 1 a. 3 r. 0 p., f., p.	4,550
The Common, Tweed Bank and ½ a., f., y.r. 75*l.*	1,450

By HAMPTON & SONS.

Bexley Heath, Kent.—The Red House and 1¾ a., f., p.	2,850

By HENRY HOLMES & CO.

Marylebone.—13 and 15, Mortimer-st. (shops and flats), u.t. 61 yrs., g.r. 40*l.* y.r. 310*l.* 2s.	3,000
Fitzroy-square.—57 and 59, Cleveland-st., u.t. 46 yrs., g.r. 40*l.*, y.r. 285*l.* 18s.	1,610
78, Charlotte-st., and 1, Chitty-st. (S), f., y.r. 211*l.*	2,800
Marylebone.—143, Gt. Portland-st. (S), u.t. 4½ yrs., g.r. 34*l.* y.r. 201*l.* 6s.	250
Norwood.—40, Howard-rd., f., e.r. 70*l.*	1,015

December 9.—By S. WALKER & SON.

Brixton.—33, Winslade-rd., u.t. 64½ yrs., g.r. 7*l.* 10s., y.r. 35*l.*	375
Sydenham.—21, 23, 25, and 27, Relinque-rd., u.t. 68¼ yrs., g.r. 18*l.* w.r. 83*l.* 4s.	465
26 to 36 (even), Maddin-rd., u.t. 68½ yrs., g.r. 28*l.* 7s., w.r. 132*l.* 12s.	705
13 to 23 (odd), Maddin-rd., u.t. 68½ yrs., g.r. 27*l.*, w.r. 120*l.* 12s.	645
Kilburn.—170, 172, and 174, Alexandra-rd., u.t. 59¾ yrs., g.r. 29*l.* 11s., y.r. 155*l.*	1,375

By EASTMAN BROS.

Penge.—71, Kingswood-rd., f., w.r. 33*l.* 16s.	375
1 to 12, Prince's-rd., f., w.r. 249*l.* 12s.	2,880
19 to 24, Prince's-rd., u.t. 79¾ yrs., g.r. 12*l.*, w.r. 132*l.* 12s.	990

By PERKINS & SONS (on the Premises).

Worthing, Sussex.—Byron-rd., Westwood, f., p.	1,200

By J. C. PLATT (at Hammersmith).

Hammersmith.—9, 10, and 11, St. Paul's-cres. (S), f., y.r. 273*l.*	
Fulham.—115 and 117, Bishop's-rd., u.t. 89 yrs., g.r. 18*l.*, y.r. 85*l.*	2,400
Shepherd's Bush.—1, 2, and 3, Wells-rd., f., w.r. 109*l.* 4s.	1,070
1, Blomfield-villas, area 11,300 ft., f., p.	415
Barnes.—129, Castelnau, u.t. 27 yrs., g.r. 5*l.*, y.r. 42*l.*	2,500

December 10.—By G. BRINSLEY & SON.

Tottenham.—21, 23, 25, 29, 31, and 33, Braemar-rd., f., w.r. 224*l.* 16s.	300

By ELLIOTT, SON, & BOYTON.

Old Kent-rd.—2, 4, 6, and 8, Calmington-rd., u.t. 78½ yrs., g.r. 31*l.*, w.r. 239*l.* 4s.	1,910

By SMALLPIECE, ALLEN, & CO.

Ashford, Middx.—Woodthorpe-rd., The Cottage and plot of building land, f., y.r. 13*l.*	1,400

By TROLLOPES.

Chelsea.—Sloane Court West, i.g.r. 57*l.* 10s., u.t. 92 yrs., g.r. 5*l.*	190

By WESTON & SONS.

Wandsworth.—24, Merton-rd. (S), u.t. 73 yrs., g.r. 8*l.*, y.r. 36*l.*	1,270
Brixton.—35, Lorn-rd., u.t. 23¾ yrs., g.r. 12*l.*, y.r. 48*l.*	340

By NORMAN & SON.

Canning Town.—21 to 31 (odd), Chauntler-rd., f., y.r. 182*l.*	985
34 to 40 (even), Hill-st., f., w.r. 93*l.* 12s.	2,100
3 to 11 (odd), Chauntler-rd., u.t. 73 yrs., g.r. 12*l.*, w.r. 146*l.* 18s.	920
253, 257, and 258, Victoria Dock-rd. (S), f., y.r. 92*l.*	1,155
Plaistow.—78 to 98 (even), Morgan-st., u.t. 79½ yrs., g.r. 34*l.*, w.r. 158*l.* 4s.	1,175
Commercial-road East.—41, Whitehorse-st. (S), f., y.r. 55*l.*	965
Stratford.—164 to 192 (even), High-st., u.t. 49½ yrs., g.r. 45*l.*, y.r. 303*l.* 12s.	610
Bow.—Wellington-rd., f.g.r. 8*l.*, reversion in 61 yrs.	3,925

December 11.—H. J. ELLIS & SONS.

Bethnal Green.—3, Hollybush-gdns., with stable, yard, &c., f., y.r. 100*l.*	190
Bonner-rd., i.g.r. 12*l.*, u.t. 41¾ yrs., g.r. nil	1,295
Hackney-rd.—59 to 67 (odd), St. Peter-st., u.t. 51¾ yrs., g.r. 81*l.*, w.r. 162*l.* 10s.	180
Buckhurst Hill.—Queen's-rd., Ystrad, f., y.r. 38*l.*	1,000

By CANE & CO.

South Kensington.—42, Drayton-gdns., u.t. 41 yrs., g.r. 21*l.*, y.r. 82*l.*	350

By CHADWICK & SONS.

Hammersmith.—3, Black Lion-lane, f., y.r. 35*l.*	900
Caledonian-rd.—20, Wynford-rd. (S), f., y.r. 45*l.*	560
74, Cummings-st., f., y.r. 19*l.* 10s.	630
68 and 72, Muriel-st., f., w.r. 74*l.* 2s.	175
Barnsbury.—19, 20, and 21, Upper Park-st., u.t. 6 yrs., g.r. 15*l.*, y.r. 96*l.*	695

By HENRY H. COLLIER.

Herne Hill.—53, Fawnbrake-av., u.t. 92 yrs., g.r. 10*l.* 10s., p.	160
Dulwich.—21, Croxted-rd., u.t. 61 yrs., g.r. 5*l.* 4s. 4d., y.r. 55*l.*	503

By ROBERT DAY.

Sydenham.—180, Sydenham-rd. (S), u.t. 61 yrs., g.r. 5*l.*, y.r. 22*l.*	£250
Holloway.—53 and 55, Langdon-rd., u.t. 73 yrs., g.r. 12*l.*, y.r. 60*l.*	390

By GEO. HEAD & CO.

Westcliffe-on-Sea, Essex.—77, Hamlet Court-rd. (S), f., y.r. 110*l.*	2,185
Norwood.—4, Portland-parade (S) and 2, Oakley-mews, u.t. 98 yrs., g.r. 15*l.*, y.r. 70*l.*	650

By WM. F. LAING.

Leyton.—113, Grange Park-rd., u.t. 63½ yrs., g.r. 5*l.*, y.r. 21*l.*	185
Stepney.—53 to 59 (odd), Gold-st., and 4, Brilliant-st., u.t. 27 yrs., g.r. 10*l.*, w.r. 143*l.*	850

By MARTEN & CARNABY.

Dulwich.—47, Lancaster-rd., u.t. 77 yrs., g.r. 15*l.*, e.r. 80*l.*	825

By C. C. & T. MOORE.

Stepney.—1, Matlock-st., with builder's yard in rear, u.t. 23¾ yrs., g.r. 4*l.* 10s., y.r. 26*l.*	270
Limehouse.—3, Rhodeswell-rd. (S), f., w.r. 31*l.* 4s.	300
16, East India Dock-rd., u.t. 29 yrs., g.r. 3*l.* 10s., y.r. 42*l.*	250
5, Dunstan's-rd., u.t. 47 yrs., g.r. 3*l.* 10s., w.r. 24*l.* 14s.	125

By RUTLEY, SON, & VINE.

Willesden.—32, 33, 34, and 35, Victor-ter. (S), f., y.r. 175*l.*	2,500
Highbury.—Benwell-rd., f.g.r. 32*l.*, reversion in 61 yrs.	880
Bayswater.—24 and 26, Newton-rd., u.t. 18 yrs., g.r. 15*l.*, y.r. 95*l.*	395

By STIMSON & SONS.

Wimbledon.—7, Lower Downs-rd., u.t. 80 yrs., g.r. 12*l.*, e.r. 50*l.*	330

Contractions used in these lists.—*F.g.r.* for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 13 0	per 1,000 alongside, in river.
Rough Stocks and Grizzles	1 10 0	" " "
Facing Stocks	2 12 0	" " "
Shippers	2 5 0	" " "
Flettons	1 7 6	" at railway depôt
Red Wire Cuts	1 12 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0	" " "
Best Blue Pressed Staffordshire	4 5 0	" " "
Do., Bullnose	4 11 0	" " "
Best Stourbridge Fire Bricks	4 8 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	13 0 0	" " "
Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	17 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamfered, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers and Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	13 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamfered, Squints	14 0 0	" " "
Seconds Quality White and Dipped Salt Glazed	9 0 0	" less than best.
Thames and Pit Sand	7	0 per yard, delivered.
Thames Ballast	6	0 " "
Best Portland Cement	30	0 per ton, delivered.
Best Ground Blue Lias Lime	21	0 " "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	10s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks, 27s. 0d. per ton at rly. dpt.	

STONE.

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depot
Bath "	1 7	" "
Farleigh Down Bath	1 8	" "
Beer in blocks	1 6	" "
Grinshill "	1 10	" "
Brown Portland in blocks	2 2	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "
YORK STONE—*Robin Hood Quality.*		
Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. "

PRICES CURRENT (*Continued*).

STONE.

6 in. Rubbed two sides	2 6	per ft. super del. rly. depot
Ditto, Ditto		
3 in. Sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. Sawn one side slabs (random sizes)	0 7½	" "
1¼ in. to 2 in. ditto, ditto	0 6	" "
BEST HARD YORK—		
Scappled random blocks	3 0	per ft. cube "
6 in. sawn two sides, landings to sizes (under 40 ft. sup.)	2 8	per ft. super. "
6 in. Rubbed two sides Ditt		" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube deld. rly. depôt
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt
" " " 3 in. do.	1 2½	" "

SLATES.

in.	in.	£ s. d.	
20 × 10	best blue Bangor	13 2 6	per 1000 of 1200 at rly. dep.
20 × 12	" " "	13 17 6	" "
20 × 10	best seconds	12 15 0	" "
20 × 12	" " "	13 10 0	" "
16 × 8	best	7 0 0	" "
20 × 10	best blue Portmadoc	12 5 0	" "
16 × 8	best blue Portmadoc	6 0 0	" "
20 × 10	best Eureka unfading green	15 0 0	" "
20 × 12	" "	16 10 0	" "
18 × 10	" "	11 10 0	" "
16 × 8	" "	8 7 6	" "
20 × 10	permanent green	10 10 0	" "
18 × 10	" "	9 0 0	" "
16 × 8	" "	6 5 0	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1,000, at rly. depôt
Hip and valley tiles	3 7	per doz. " "
Best Broseley tiles	50 0	per 1,000 " "
Do. Ornamental tiles	52 6	" " "
Hip and valley tiles	4 0	per doz. " "
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 " "
Do. ornamental Do.	60 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3	" " "
Best Red or Mottled Staffordshire Do. (Peakes)	51 0	per 1,000 " "
Do. Ornamental Do.	54 6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles	3 8	" " "
Best "Rosemary" brand plain tiles	48 0	per 1,000 " "
Do. Ornamental Do.	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15 10 0	16 10 0	
Deals: best 3 by 9	14 10 0	15 10 0	
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0	
Battens: best 2½ by 6 and 3 by 8	9 10 0	less than 7 in. and 8 in.	
Deals: seconds	1 0 0	less than best	
Battens: seconds	0 10 0	" " "	
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	9 10 0	
2 in. by 4½ in. and 2 in by 5 in.	8 10 0	9 10 0	
Foreign Sawn Boards—			
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.	
¾ in.	1 0 0	"	
Fir timber: Best middling Dantzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0	
Seconds	4 5 0	4 10 0	
Small timber (8 in. to 10 in.)	3 12 6	3 15 0	
Small timber (6 in. to 8 in.)	3 6 0	3 10 0	
Swedish balks	2 15 0	3 0 0	
Pitch-pine timber (50 ft. average)	3 5	3 15 0	

JOINERS' WOOD.

	At per standard.		
White Sea: First yellow deals, 3 in. by 11 in.	23 0 0	24 0 0	
3 in. by 9 in.	21 0 0	22 10 0	
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0	
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0	
" " 3 in. by 9 in.	17 10 0	19 0 0	
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0	
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0	
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0	
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0	
Do. 3 in. by 9 in.	18 0 0	19 10 0	
Battens	13 10 0	15 0 0	
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0	
Do. 3 in. by 9 in.	14 10 0	16 0 0	
Battens	11 10 0	12 10 0	
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0	
Do. 3 in. by 9 in.	13 0 0	14 0 0	
Battens	10 0 0	11 0 0	
White Sea and Petersburg:—			
First white deals, 3 in. by 11 in.	14 10 0	15 10 0	
" " 3 in. by 9 in.	13 10 0	14 10 0	
Battens	11 0 0	12 0 0	
Second white deals 3 in. by 11 in.	13 10 0	14 10 0	
" " " 3 in. by 9 in.	12 10 0	13 10 0	
" " " battens	9 10 0	10 10 0	
Pitch-pine: deals	16 0 0	18 0 0	
Under 2 in. thick extra	2 10 0	1 0 0	
Yellow Pine—First, regular sizes	33 0 0	upwards.	
Oddments	22 0 0	24 0 0	
Seconds, regular sizes	24 10 0	26 10 0	

[*See also next page.*

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £ s. d.	£ s. d.
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 4 6
Dantzig and Stettin Oak Logs—Large, per ft. cube	0 2 6	0 3 6
Small ,, ,,	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube	0 3 0	0 3
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¼ in. do.	0 0 6½	- - -
Dry Mahogany—Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 10 0	20 0 0
American Whitewood Planks—Per ft. cube	0 4 0	- - -

Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 1 6
1 in. by 7 in. white, planed and shot	0 11 6	0 13 6
1 in. by 7 in. white, planed and matched	0 12 0	0 14 0
1¼ in. by 7 in. white, planed and matched	0 14 6	0 16 6
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0 11 0	0 13 6
1 in. by 7 in. do. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders ,, ,,	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Flitch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6	8 5 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 15 0	8 5 0
Staffordshire Crown Bars, good merchant quality	8 5 0	8 15 0
Staffordshire "Marked Bars"	10 10 0	- - -
Mild Steel Bars	9 0 0	9 10 0
Hoop Iron, basis price	9 5 0	9 10 0
,, ,, galvanised	15 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.—		
Ordinary sizes to 20 g.	10 0 0	- - -
,, ,, to 24 g.	11 0 0	- - -
,, ,, to 26 g.	12 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes 6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.	14 5 0	- - -
Sheet Iron, Galvanised, flat, best quality :—		
Ordinary sizes to 20 g.	16 0 0	- - -
,, ,, 22 g. and 24 g.	16 10 0	- - -
,, ,, 26 g.	18 0 0	- - -
Galvanised Corrugated Sheets :—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.	14 5 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.	14 5 0	- - -
Cut nails, 3 in. to 6 in.	9 5 0	9 15 0
(Under 3 in. usual trade extras.)		

LEAD, &c.

	Per ton, in London £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	13 5 0	- - -
Pipe in coils	13 15 0	- - -
Soil Pipe	16 5 0	- - -
Compo Pipe	16 5 0	- - -
ZINC—Sheet—		
Vieille Montagne ton	23 0 0	- - -
Silesian	24 10 0	- - -
COPPER—		
Strong Sheet per lb	0 0 10	- - -
Thin ,,	0 0 11	- - -
Copper nails ,,	0 0 11	- - -
BRASS—		
Strong Sheet ,,	0 0 9	- - -
Thin ,, ,,	0 0 10	- - -
TIN—English Ingots ,,	0 1 3	- - -
SOLDER—Plumbers' ,,	0 0 6½	- - -
Tinmen's ,,	0 0 8½	- - -
Blowpipe ,,	0 0 9½	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths	1¾d. ,, ,,
21 oz. thirds	3½d. ,, ,,
,, fourths	2¾d. ,, ,,
26 oz. thirds	4d. ,, ,,
,, fourths	3¼d. ,, ,,
32 oz. thirds	5d. ,, ,,
,, fourths	4¼d. ,, ,,
Fluted sheet, 15 oz.	3d. ,, ,,
,, 21 ,,	4d. ,, ,,
½ Hartley's Rolled Plate	1¾d. ,, ,,
⅝ ,, ,, ,,	2d. ,, ,,
¾ ,, ,, ,,	2¾d. ,, ,,

PRICES CURRENT (*Continued*).

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels	per gallon	0 2 4
,, ,, ,, in drums	,,	0 2 7
Boiled ,, ,, in pipes or barrels	,,	0 2 6
,, ,, ,, in drums	,,	0 2 9
Turpentine, in barrels	,,	0 3 3
,, in drums	,,	0 3 5
Genuine Ground English White Lead	per ton	21 0 0
Red Lead, Dry	,,	20 0 0
Best Linseed Oil Putty	per cwt.	0 3 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 6
Superfine Hard-drying Oak, for Seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

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Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

*** Owing to the Christmas holidays, the *Builder* will be published next week on Wednesday instead of Friday. All communications for the Editor must therefore reach our office not later than 10 a.m. on Tuesday morning.

* Denotes *accepted*. † Denotes *provisionally accepted*.

BRIERLEY HILL (Staffs.).—For the erection of technical school, library, &c., for the Urban District Council. Mr. J. Lewis Harpur, Surveyor, Council Offices, Brierley Hill :—

A. & S. T. Bishop	£5,365	T. Griffiths	£4,805
Wm. Hopkins	5,300	Dallow	4,700
Sapcote & Sons	5,267	Guest & Sons	4,650
Brooks & Tandy	5,120	Oakley & Coulson	4,627
J. Herbert	5,014	C. Horton, Brierley Hill*	4,457
Meredith	4,978		
F. L. Jones	4,965		

CARDIFF.—For the erection of four cash offices, for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff :—

F. Waterman	£813 4 1	Turner & Sons	£560 10 8
W. Parnall	696 2 9	F. Small	511 0 0
Gough Bros.	690 0 0	Knox & Wells, Cardiff*	480 15 6
Symonds & Co.	600 3 10		
A. W. Cadwallader	564 7 10		

DROGHEDA.—For the erection of ten cottages, Windmill-lane, for the Corporation :—
P. M'Cann, Fair-street, Drogheda* £390

EALING.—For the erection of D'Eresby House, Ealing Common, for D'Eresby House, Ltd. Messrs. Palgrave & Co., architects, Westminster, S.W. Quantities by Mr. George Stephenson :—

Spencer, Santo, & Co., Ltd.	£25,250 0 0
Patman & Fotheringham, Ltd.	23,134 0 0
Foster Bros.	22,878 0 0
Miskin & Sons	22,491 0 0
M. Hedges	21,723 3 4
Haslemere Builders, Ltd.	20,867 0 0
A. G. Crisp	20,750 0 0
S. E. Moss	20,025 10 0
Speechley & Smith	19,800 0 0
Bailey & Fry	19,322 10 0
Battley, Sons, & Holness	19,197 0 0
Chambers Bros.	18,921 0 0
Hunt & Sons	18,191 0 0

HOUNSLOW (Middlesex).—For alterations and additions to 82 and 84, High-street, Hounslow, for Mr. F. Welch. Mr. W. A. Davies, architect and surveyor, Town Hall Chambers, High-street, Hounslow. Quantities supplied :—

	A	B
Chas. Emmett	£1,644 17 11	£887 0 3
D. D. Heath	1,950 10 0	—
A. Westbrook	1,585 0 0	925 0 0
W. Irwin, Isleworth	1,548 0 0	849 0 0

HOUNSLOW.—For additions to No. 85, High-street, Hounslow. Mr. W. A. Davies, architect, Hounslow :—
W. Irwin* £660

HOUNSLOW (Middlesex).—For four shops, corner of Lampton-road and High-street, Hounslow, for Mr. A. Ramsden. Mr. W. A. Davies, architect and surveyor, Town Hall Chambers, Hounslow. Quantities supplied :—

H. Eydmann	£5,700	Dorey & Sons	£5,500
C. Emmett	5,575	W. Wisdom	5,395
J. Macklin	5,552	S. Hiscock	5,250
S. Nichols	5,540	W. Irwin	5,250

HOUNSLOW (Middlesex).—For new roads, sewers, footpaths, and kerbing, &c., on the Kingsley Estate, Hounslow. Mr. W. A. Davies, A.M.Inst.C.E., engineer :—

J. Macklin	£1,768	Mowlem & Co.	£1,619
S. Kavanagh	1,668	Lawrence & Thacker	1,522

HOVE (Sussex).—For the execution of road works, Granville-road, for the Corporation. Mr. H. H. Scott, Borough Surveyor, Town Hall, Hove :—
Parsons & Sons, 118, Church-road, Hove* .. £394

LONDON.—For alterations and additions, &c., at 515, Kentish Town-road, N.W., for the London and Provincial Banking Co., Ltd. Mr. W. Batting, architect, 7, John-street, Adelphi, W.C. Quantities by Mr. C. O. Law, 5, Arundel-street, Strand, W.C. :—

W. B. Ball	£1,561	Stanley Bird & Co.	£1,493
Williams & Carnall	1,567	Gould & Brand	1,479
A. J. Bellew	1,514	Sims & Wood	1,426
Marchant & Hirst	1,499	A. A. Webber	1,379

LONDON.—For rebuilding Nos. 105 and 107, Upper Clapton-road, N., for Dr. W. B. Benjafield. Mr. Arthur Tighe, architect, 70, Finsbury-pavement, E.C. :—

Barrett & Power	£2,196	Ellis & Turner	£1,750
Snewin Bros.	1,769	Lawrence & Son	1,744
Osborn & Son	1,870	Thompson & Son*	1,599

LONDON.—For the supply of the necessary wiring and fittings, and for the necessary electric bell installations at Clapham and Highbury fire-stations, for the London County Council :—

Clapham Station.

W. G. Murrin	£554 10 0	Bakewell & Co.	£328 18 0
Jackson Bros.	415 18 6	E. Thornton	324 16 0
Bennett & Co.	324 10 0	Wenham & Waters, Ltd.	323 15 0
Mossop & Co.	367 16 0	The Southern Electrical Installation and Wiring Co., Ltd.	320 3 0
Nunn, Watts, & Co.	340 0 0	Coleby & Co.*	233 0 0
Lawrence & Co.	340 0 0		
Barlow Bros. & Co.	340 0 0		

Highbury Station.

Jackson Bros.	£302 0 0	The Southern Electrical Installation and Wiring Co., Ltd.	£257 0 0
Sutton & Co.	290 9 7	Barlow Bros. & Co.	250 0 0
Mossop & Co.	288 12 0	Nunn, Watts, & Co.	235 0 0
Wenham & Waters, Ltd.	281 10 0	A. H. Marshall	230 0 0
Bakewell & Co.	275 0 0	Coleby & Co.*	176 5 0
Lawrance & Co.	260 0 0		

ST. LEONARDS-ON-SEA.—For the enlargement of Hollington Schools, St. Leonards-on-Sea, for the United District School Board. Mr. C. A. Pigott, architect, Saxon-chambers, London-road, St. Leonards. Quantities by architect :—

Gann & Co.	£3,200 0	Cruttenden & Son	£2,097 0
Tapner, Simmonds, & Co.	3,150 0	Padgham & Hutchinson	2,025 0
T. Tingle	3,091 0	J. Harvey	2,875 0
J. Parker	3,073 0	H. Ashdown	2,873 5
C. Hughes	3,062 0	J. Lester, St. Leonards*	2,797 0
A. H. White	2,999 0		

SWINDON.—For laying a 12-in. water-main, Whitefield Farm to Overtown, Wroughton, for the Corporation :—
J. Riley, Cheltenham* £971

WALLINGTON.—For forming part of Grosvenor-avenue, Wallington, Surrey, and laying sewer and surface water drain, for Mr. J. Garstone, and under the supervision of Mr. Arthur L. Dartnell, architect and surveyor, 62, High-street, Croydon :—

Streeter Bros.	£340 0	W. Martin*	£325 13

WEST HAM.—For the erection of the Hilda-road Public Elementary Schools, Canning Town, E., for the West Ham School Board. Mr. William Jacques, architect, 9, Fen-court, E.C. Quantities by Messrs. R. L. Curtis & Sons :—

H. L. Holloway	£33,360	Holliday & Greenwood	£24,295
A. E. Symes	27,317	A. Reed	23,271
Munday & Son	26,987	Gregar & Son, Stratford‡	23,273
G. Sharpe	26,119		
W. J. Maddison	25,578		

‡ Accepted subject to the approval of the Board of Education.

[*See also next page.*

CONTRACTS, COMPETITIONS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
Designs for University Buildings, Cape of Good Hope	Agnt.-Gen. for Cape of Good Hope	400*l.*, 200*l.*, 100*l.*	Jan. 31
*Extension of Town Hall	Hull Corporation	300*l.*, 200*l.*, and 100*l.*	Mar. 31
*New Free Library	Kettering U.D.C.	60*l.*, 40*l.*, and 25*l.*	No date
*New Public Offices	Pontypridd U.D.C.	Not stated	do.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., Supplied by	Tenders to be delivered
House, Blaengarw	.....	C. Davies, 29, Strand, Blaengarw, Wales	Dec. 23
Post Office, Limerick	.....	District Office of Public Works, Limerick	do.
Offices, Water-street, Liverpool	Messrs. Elder, Dempster & Co.	Briggs & Co., Architects, 51, North John-street, Liverpool	do.
Alterations to Nos. 1 & 3, Promenade, Bridlington	Mr. W. H. Tiplady	J. Earnshaw, Architect, Carlton House, Bridlington	do.
Public Baths, Baltic-street	Glasgow Corporation	J. Lindsay, City Chamberrs, Glasgow	do.
Library Buildings, Anderston	do.	Stewart & Paterson, Architects, 143, West Regent-st., Glasgow	do.
Sewer, Oak Hill-road	Walthamstow U.D.C.	G. W. Holmes, Civil Engineer, Town Hall, Walthamstow	do.
Two Houses, Hensingham, near Whitehaven	.....	A. Huddart, Architect, 21, Lowther-street, Whitehaven	Dec. 24
Additions to Business Premises, Hull	Messrs. Bladons	B. S. Jacobs, Architect, Bowl-alley-lane, Hull	do.
Additions to Invercauld Arms Hotel, Braemar	.....	Jenkins & Marr, Civil Engineer, 16, Bridge-street, Aberdeen	Dec. 27
Twenty-five Cottages, Whelley	Wigan Corporation	H. Jevons, Municipal Offices, Wigan	do.
Fourteen Cottages, Ellis-street, Whelley	do.	do.	do.
Twenty-five Houses, Pengam, Wales	.....	D. Williams, Board School, Pengam	Dec. 28
House and Shop, near Brynamman, Wales	.....	Mr. Bartholomew, Architect, Greenville House, Brynamman	do.
Additions to School, Dunn-street, Jarrow	.....	T. H. Spencer, School Board Offices, Jarrow	Dec. 29
Police Station, Great Ayton	North Riding County Council	W. H. Brierley, Architect, 13, Lendal, York	do.
Street Works, Kimberley-street	West Hartlepool Corporation	J. W. Brown, Borough Engineer, West Hartlepool	do.
Street Works, Baxter-road	Sale U.D.C.	W. Holt, Engineer, Council Offices, Sale	Dec. 30
Mortuary Chapel, near Goole	Swinefleet Parish Council	H. B. Thorp, Architect, Goole	do.
Business Premises, Alexandra-road, Aberystwyth	.....	J. A. Jones, Architect, 7, Queen's-terrace, Aberystwyth, Wales	Dec. 31
Thirty-four Artisans' Dwellings, Rustenburgh-street	Hull Corporation	J. H. Hirst, City Architect, Town Hall, Hull	do.
Road Materials, &c., Horsham	West Sussex County Council	W. S. Purser, Civil Engineer, 4, Worthing-road, Horsham	do.
Iron Fencing, Grantown, N.B.	.....	Donald Grant, Grantown, N.B.	Jan. 1
House, Glenville, Co. Cork	.....	T. F. Hynes, Architect, 21, South Mall, Cork	do.
Schools	Heworth (Durham) School Board	H. Miller, Architect, Felling	Jan. 5
Cottages	Strabane (Ireland) R.D.C.	J. E. Sharkie, Council Offices, Strabane	Jan. 6
Supply of Stores, Materials, &c.	Borough of Camberwell	W. Octoby, Borough Engineer, Town Hall, Camberwell, S.E.	do.
Additions to the Victoria Infirmary, Northwich	.....	J. A. Cowley, 88, Witton-street, Northwich	do.
*Park Keeper's Lodge, &c.	Acton District Council	Surveyor to the Council, 242, High-street, Acton, W.	do.
*Building for Bakery	Sheerness Economical Society, Ltd.	Office of the Sheerness Economical Society, Ltd., Sheerness	Jan. 7
*Foundations of Chief Fire Station, Police Station, &c.	Manchester Corporation	City Treasurer, Town Hall, Manchester	do.
Modern Cooking Appliances	Down District Lunatic Asylums	Graeme, Watt & Tulloch, 77a, Victoria-street, Belfast	Jan. 10
Road Works, Bridge-street	Dollar (N.B.) Town Council	Mr. Young, Town Hall, Dollar, N.B.	do.
*Public Free Library	Ilkeston Corporation	Hunter & Woodhouse, Architects, Belper	Jan. 13
*Lunatic Asylum	York Asylum Visiting Committee	A. Creer, Architect, Guildhall, York	Jan. 16
*New School at Selwyne-avenue, Hale End, &c.	Walthamstow School Board	Architect to the Board, School Board Offices, Walthamstow	Jan. 28
*Artificial, &c., Paving Stone	Battersea Borough Council	Borough Surveyor, Municipal Buildings, Lavender Hill, S.W.	No date
*Erection of Head Offices, Liverpool	Messrs. Elder, Dempster & Co.	Briggs & Wotstenholme, &c., Archts., 51, North John-st., Liverpool	do.
Excavation Works	Consett (Durham) Iron Co.	J. Scott, Engineer, Iron Company Offices, Consett	do.
Concrete Works, Monaltrie Bridge, Ballater, N.B.	.....	J. Milne, Road Surveyor, Aboyne	do.
Street Works, Hill-street, &c.	Tollington (Lancs.) U.D.C.	L. Kenyon, Surveyor, Council Offices	do.
Additions to Schools, Glanadda	Bangor School Board	H. Hughes, Architect, Bangor	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Required.	Salary.	Application to be in
*Architectural Assistant	Borough of Southend-on-Sea	120*l.* per annum	Dec. 29
*Clerk of Works	Manchester Corporation	4*l.* 4*s.* per week	Jan. 7
*Labour Superintendent	U.D.C. of Bromley	2*l.* 10*s.* per week	do.

Those marked with an asterisk (*) are advertised in this Number. Competitions, iv. Contracts, pp. iv. vi. viii. & x. Public Appointments, xvii.

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's Architect :—

** Recommended for acceptance.*

ALVERTON-STREET (B & G).—Providing glazed partition to divide classroom C, and reversing stepped flooring in one of these rooms for left light, including bricking up fireplaces and providing open portable stoves and new flues and stack in connexion with same, for warming the redivided rooms in each case :—

H. Line, Schedule Prices (1901) + 15 per cent.	£384	W. V. Goad	£384
Maxwell Bros., Ltd.	£495	Marsland & Sons	373
T. D. Leng	330	Akers & Co.	337
W. Downs	391	H. Groves	318
		G. Kemp*	285

ANERLEY COTTAGE HOMES and LINDEN LODGE.—Providing and fixing sixty lockers :—

	Anerley Cottage Homes.	Linden Lodge.
	s. d.	s. d.
Spencer & Co.	each 19 10	20 6
H. Bonneau	,, 19 9	20 0
T. Cruwys	,, 19 9	19 9
Hammer & Co., Ltd.	,, 16 9	16 9
London School Furniture Co.*	,, 14 3	14 3

GALLEYWALL-ROAD (Special school).—Providing new offices for both departments, and altering the position of coal store in connexion with same ; also providing oak fencing to form separate playgrounds :—

T. L. Green	£527	J. Garrett & Son	£401
W. Downs	458	Belcher & Co., Ltd.	385
J. Appleby	425	J. C. Chalkley*	319
H. Groves	425		

GRANGE HILL-ROAD (New School).—Accommodation : Boys, 380 ; girls, 380 ; infants, 382 ; total, 1,142. Graded school on three stories. Halls : Boys', 57 ft. 3 in. by 30 ft. ; girls', 58 ft. by 30 ft. ; infants', 57 ft. 3 in. by 29 ft. 7½ in. Class-rooms : Boys', 60, 48, 48, 48, 48, 48, 48, 40, 40 ; girls', 60, 48, 48, 48, 48, 48, 40, 40 ; infants', 60, 50, 48, 48, 48, 48, 40, 40. Drawing classroom, 611 ft. 4 in. Science-room, 611 ft. 4 in. Heating by open fires and stoves :—

Lathey Bros.	£28,647	Garrett & Son	£26,642
F. & H. F. Higgs	28,532	Wallis & Sons	26,487
J. Greenwood	28,147	Smith & Sons, Ltd.	26,297
Johnson & Co., Ltd.	27,992	Treasure & Son	25,996
Lorden & Son	27,888	Marsland & Sons	25,942
L. H. & R. Roberts	27,812	J. & C. Bowyer	25,878
Munday & Sons	27,777	Stimpson & Co.	25,440
W. Downs	27,301	J. & M. Patrick, London and Rochester*	24,141
Lawrance & Sons	27,017		
McCormick & Sons	26,708		

NEW PARK-ROAD.—Enlargement. Boys, 120 ; girls, 120 ; infants, 180 ; total, 300. Classrooms—Boys, 60, 40 ; girls, 60, 40 ; infants, 60, 40. Providing new staircase for boys and cloakroom for each department, also re-dividing room B in each department :—

Leslie & Co., Ltd.	£4,614	Bulled & Co.	£4,261
Smith & Son	4,547	E. Triggs	4,261
Johnson & Co., Ltd.	4,480	J. Appleby	4,250
Marsland & Sons	4,456	Lathey Bros.	4,205
Garrett & Son	4,390	Mitchell & Son	4,171
F. & H. F. Higgs	4,366	Rice & Son	3,995
Martin, Wells, & Co., Ltd.	4,322	Johnson & Co.*	3,861

OLD CASTLE-STREET—(Mixed).—Glazed partition to divide classroom R and constructing new fireplace to warm one of the divided rooms ; also providing six ventilating skylights, viz., to classrooms I, K, M, N, P, Q :—

Unsigned	£496	Johnson & Co.	£395
G. Barker	420	A. J. Sheffield*	395

RENDLESHAM-ROAD.—Removing present lath and plaster partition, and providing two new sliding glazed partitions in order to divide classrooms B and C into three rooms ; providing an open-fire stove for warming the middle room and constructing a brick flue in connexion with same, also providing a skylight for improving light of middle room :—

London School Furniture Co.	£395 0	Shurmur & Sons, Ltd.	£279 0
Grover & Son	296 0	F. & F. J. Wood	279 0
Barrett & Power	280 0	W. Martin	261 10
		Stevens Bros.*	242 10

Supply of GAS METERS, on a running contract :—

Contractors.	3-light.	5 light.	10-light.	20-light.	30-light.	50-light.	60-light.	80-light.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
The Gas Meter Co., Ltd. G. Glover & Co., Ltd. T. Glover & Co., Ltd.* Parkinson & W. & B. Cowan, Ltd. ..... each	1 3 10	1 8 11	1 17 7	2 11 8	3 11 2	4 18 6	6 12 0	8 7 4
J. Pinchbeck	1 3 10	1 8 11	1 17 7	2 11 8	3 11 2	4 18 6	6 12 0	8 7 4
Willey & Co.	1 2 5	1 7 3	1 15 4	2 8 6	3 6 9	4 12 5	5 3 10	7 17 0
Hulett & Co., Ltd.	1 2 0	1 5 0	1 12 6	2 8 0	3 3 0	4 11 6	5 13 0	7 5 0

Contractors.	100-light.	120-light.	140-light.	150-light.	180-light.	200-light.	250-light.	300-light.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
The Gas Meter Co., Ltd. G. Glover & Co., Ltd. T. Glover & Co., Ltd.* Parkinson and W. & B. Cowan, Ltd. ..... each	10 16 6	11 17 0	—	14 19 0	—	17 19 1	22 15 6	27 2 3
J. Pinchbeck	10 16 6	—	—	—	—	—	—	—
Willey & Co.	10 3 1	11 2 4	—	14 0 8	—	18 14 7	21 7 6	25 8 11
Hulett & Co., Ltd.	9 10 0	11 15 0	14 5 0	14 10 0	17 10 0	18 15 0	22 0 0	25 15 0

* Recommended for acceptance.

Supply of BLINDS (portion only), on a running contract :—

Articles.	Adkins & Williams.	W. Cauron & Son.	Jones & Son.*	G. F. Jones & Co.	Tidmarsh & Sons.	Wood & Gregory, Ltd.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Brown Holland or Striped Blinds fixed on Wood Rollers, complete as Item 1 ..... per ft. super	0 5½	0 4½	0 3	0 4½	0 3½	1 0
Do. do. on Wood Rollers, as Item 2 ..... ,,	0 5½	0 4	0 3	0 4½	0 3½	0 9½
Do. do. on Tin Barrel Rollers, as Item 3, 2½ in. in diameter ..... ,,	0 5½	0 4½	0 3½	0 5½	0 3½	1 6
Do. do. on Tin Barrel Rollers, as Item 3, 3 in. in diameter ..... ,,	0 6	0 4½	0 3½	0 5½	0 4	2 0
Do. do. on Tin Barrel Rollers, as Item 3, 3½ in. in diameter ..... ,,	0 6½	0 4½	0 3½	0 6½	0 4	2 9
Do. do. on Spring Rollers, as Item 4, 2 in. in diameter ..... ,,	0 5½	0 5½	0 4½	0 6½	0 4½	3 6
Do. do. on Spring Rollers, as Item 4, 2½ in. in diameter ..... ,,	0 6½	0 5½	0 4½	0 7	0 4½	4 3
Do. do. on Spring Rollers as Item 4, 3 in. in diameter ..... ,,	0 6½	0 5½	0 4½	0 7½	0 4½	4 9

Supply of BRUSHES and CANE RODS (for drains and lavatories), on a running contract :—

Contractors.	Brushes.	Rods, 4 ft. 6 in.	Rods, 6 ft.	Rods, 7 ft. 6 in.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Nicholls & Clarke, Ltd. ..... per doz.	0 12 0	1 6 0	1 13 0	2 5 0
Mechanical Appliances Co., Ltd.* ,,	0 14 0	0 13 0	0 15 0	0 16 0

* Recommended for acceptance.

Supply of TIMBER (for use in repairs to furniture), on a running contract :—

Description of Timber.	R. Garrard & Co.	Ingram, Perkins, & Co.	W. J. Latchford.	James Latham, Ltd.	London School Furniture Co.	W. Mallinson & Co.	S. Putney.*
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Yellow deal (machine planed, all round)							
2½ in. by 9 in., per foot run	0 3½	0 4½	0 4	0 5	0 6	—	0 3½
1½ in. by 9 in., ,, ...	0 2½	0 3½	0 3½	0 5	0 5	—	0 3½
1 in. by 9 in., ,, ...	0 2½	0 2½	0 3	0 4	0 3½	—	0 2½
1½ in. by 7 in., ,, ...	0 2	0 2½	0 2	0 4½	0 3	—	0 2½
1 in. by 7 in., ,, ...	0 1½	0 1	0 1½	0 3	0 2½	—	0 2
Yellow Deal (from the saw)—							
3 in. by 3 in., per foot run	0 2½	0 2	0 3	0 2½	0 2½	—	0 2
3 in. by 2½ in., ,, ...	0 1½	0 1½	0 2½	0 2½	0 2	—	0 1½
Yellow Deal Matching—							
¾ in. by 7 in., per square	13 0	12 6	14 0	14 6	15 0	—	13 6
Pitch Pine (machine planed, all round)—							
1¼ in. by 11 in., per foot run	0 7½	0 4	0 7½	0 5½	0 6	0 6½	0 5
¾ in. by 11 in., ,, ...	0 4	0 3½	0 4½	0 4	0 3½	0 4½	0 4½
⅝ in. by 11 in., ,, ...	0 3	0 2½	0 3½	0 2½	0 2½	0 3½	0 3
1¼ in. by 9 in., ,, ...	0 5	0 3	0 5	0 4	0 3½	0 5	0 3½
½ in. by 9 in., ,, ...	0 2½	0 1½	0 3	0 2½	0 2	0 3	0 1½
1 in. by 7 in., ,, ...	0 3	0 1½	0 4	0 2½	0 2½	—	0 2½
Yellow Pine (machine planed, all round)							
1 in. by 11 in., per foot run	0 4½	0 6½	0 6	0 6	0 6	0 7	0 4½
½ in. by 11 in., ,, ...	0 3	0 4	0 4	0 3½	0 3	0 4½	0 3

THOMAS-STREET.—Providing one additional class room of fifty for girls' department, also new cloakroom :—

Munday & Sons	£1,128 0	Lawrance & Sons..	£997 0
Wall & Co.	1,079 0	Clarke & Bracey	978 0
Marchant & Hirst	1,072 0	Staines & Son	970 0
Treasure & Son..	1,062 0	Willmott & Sons ..	945 0
Perry & Co.	1,043 0	King & Son	937 0
Gregar & Son	1,042 0	C. Cox	882 0
Shurmur & Sons, Ltd.	999 0	F. & F. J. Wood ..	877 0
		Lathey Bros.*	793 0

The interiors of the following schools will be cleaned between December 13, 1902, and January 3, 1903.

† The exterior painting in these cases will be executed between April 4 May 2, 1903.

BARING-ROAD :—

Leney & Co.	£127 10 0	Hayter & Son	£98 10 0
T. D. Leng	115 0 0	W. Banks	90 15 6
H. Groves	104 0 0	G. Kemp*	80 0 0

†CHURCH-STREET :—

J. F. Ford	£310 0	Lorden & Son	£255 15
Rice & Son	305 0	H. & G. Mallett*	250 5

COOK'S-GROUND :—

General Builders, Ltd.	£269	E. Triggs	£189
Lathey Bros.	213	W. R. & A. Hide	158
G. H. Sealy	199	* W. Hammond	149
Marchant & Hirst	193		

DETMOLD ROAD :—

McCormick & Sons	£333	H. Runham Brown	£248
Barrett & Power	260	A. W. Derby*	233
Collis Willmott & Son.	260	J. Stewart*	208
W. Silk & Son	251		

EARDLEY-ROAD :—

Johnson & Co., Ltd.	£247 0	Hudson Bros.	£177 0
Leney & Son	243 0	Lorden & Son	166 13
J. & C. Bowyer	196 0	Bulled & Co.*	137 0

ELIZABETH-STREET.—

J. & M. Patrick	£197 0	W. J. Howie	£132 10
G. Kemp	145 0	W. Hayter & Son*	113 0

ELTRINGHAM-STREET :—

Green & Twilley	£410 0	Martin, Wells, & Co., Ltd.	£290 0
R. S. Ronald	365 0	Lorden & Son	244 15
W. Hornett	309 0	C. Gurling	228 0
E. Triggs	252 0	Garrett & Son*	219 0

Supply of the following ARTICLES, on running contracts:—

	Folding Screens for flat floors. Per foot super.	Folding Screens for stepped floors. Per foot super.	Boards (for free-arm drawing). Each.	Maypoles. Each.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H. Bouneau	0 1 10	0 1 11	0 3 6	3 9 6
T. Cruwys	0 1 0	0 1 1	*0 2 9	1 11 0
General Builders, Ltd.	0 1 7½	0 1 8	—	3 4 10
Hammer & Co., Ltd.	0 1 4	0 1 4	0 3 4	3 3 6
Lascelles & Co.	0 1 3	0 1 4	—	—
London School Furniture Co.	0 1 4	0 1 6	0 3 5	—
W. Martin	—	—	—	2 16 0
North of England School Furnishing Co., Ltd.	—	—	0 3 6	—
Spencer & Co.	*0 1 0	*0 0 11½	—	*1 10 6
Waring & Sons, Ltd.	0 1 6	0 1 6	—	—

GILL-STREET:—

A. E. Symes	£267 0	Gibb & Co.	£154 0
A. J. Sheffield	187 0	Vigor & Co.	147 0
A. W. Derby	167 0	Haydon & Sons*	127 10
Barrett & Power	100 0		

GLENGALL-ROAD:—

Corfield & Co.	£341 0	Gibb & Co.	£279 0
Johnson & Co.	328 0	A. W. Derby	276 10
Viney & Stone	310 0	Elkington & Sons*	230 0
A. E. Symes	295 0		

HAVERSTOCK-HILL:—

T. Cruwys	£425	Denshan & Sons	£220
Viney & Stone	322	Marchant & Hirst*	218
Wall & Co.	241		

MARNER-STREET:—

Turnbull & Son	£448 0	A. W. Derby	£193 0
Gibb & Co.	219 0	Vigor & Co.	182 10
J. F. Holliday	218 0	A. J. Sheffield*	160 0

STEPHEN-STREET:—

T. Cruwys	£391 0 0	Marchant & Hirst	£230 0 0
H. C. Clifton	334 0 0	F. Chidley	224 16 3
R. S. Buckeridge	285 0 0	Denshan & Sons*	185 0 0
Thompson & Beveridge	271 0 0		

VIRGINIA-ROAD.—

Johnson & Co.	£258 0	Gibb & Co.	£209 0
G. Barker	250 0	Silk & Son	197 0
Corfield & Co	246 0	H. Runham Brown*	173 10
Belcher & Co., Ltd.	211 5		

WESTMORELAND-ROAD.—

Jenkin & Co.	£364 5	Lathey Bros.	£269 0
H. J. Williams	288 10	Sayer & Son	261 0
Maxwell Bros., Ltd.	286 0	E. Triggs*	219 0

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Carter & Aynsley, Ltd.	2 9½
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Nettlefold & Sons	2 1
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